DEPT.

Gas Journal

Vol. 272. 104th Year. LONDON, DECEMBER 10, 1952. No. 4671. Price 1/3
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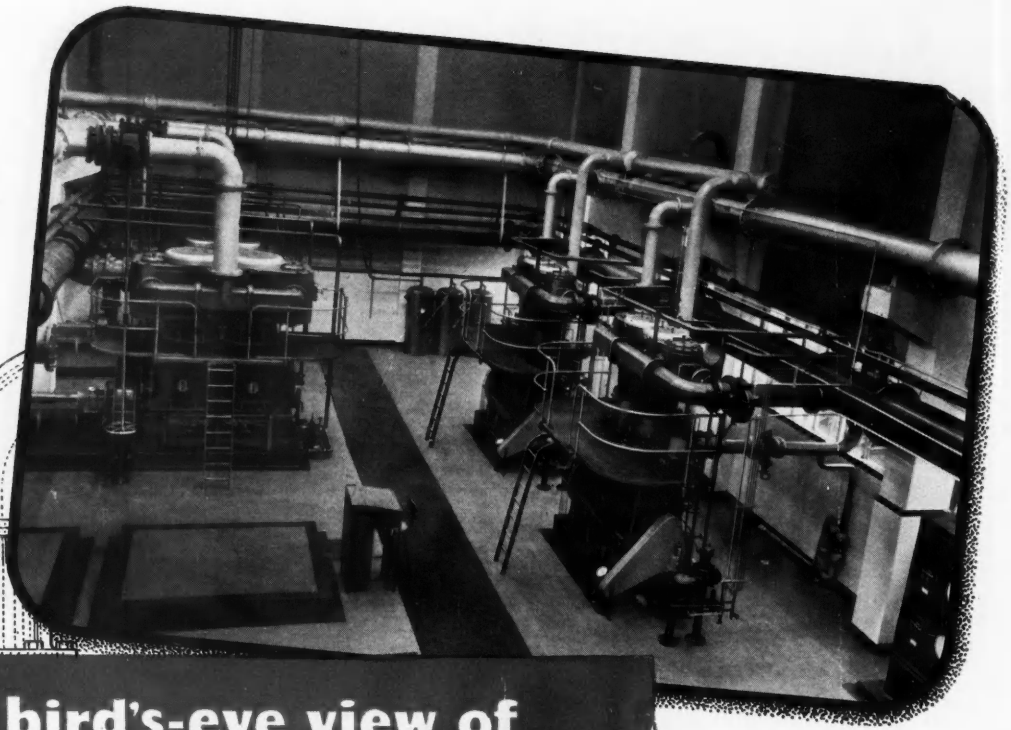
I hereby certify that Her Majesty's Commissioners
upon the Award of the Jurors have presented a Prize Medal to
T. G. Glover
for a Gas Meter
shown in the Exhibition
Exhibition
Hyde Park London, 15th Oct.r 1851
President of the Royal Commission



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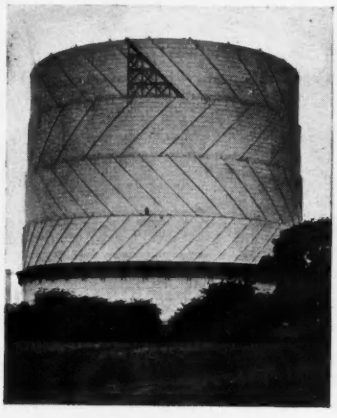

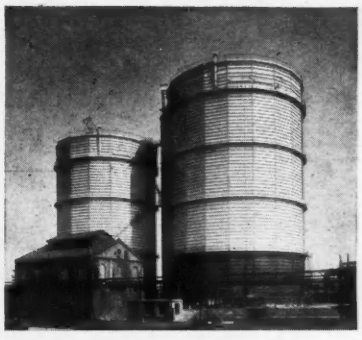

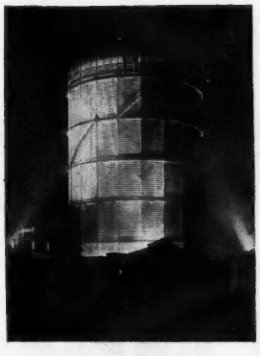

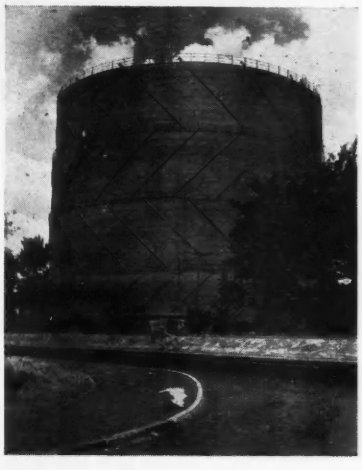

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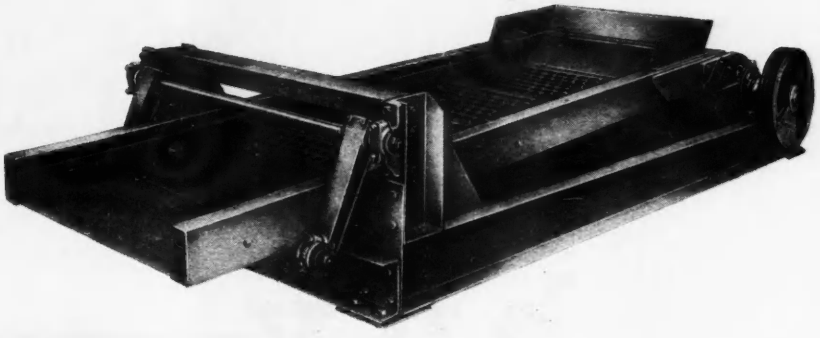

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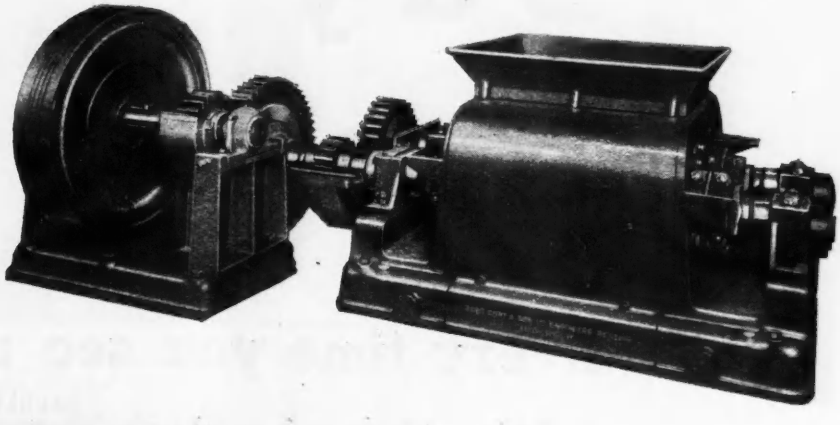

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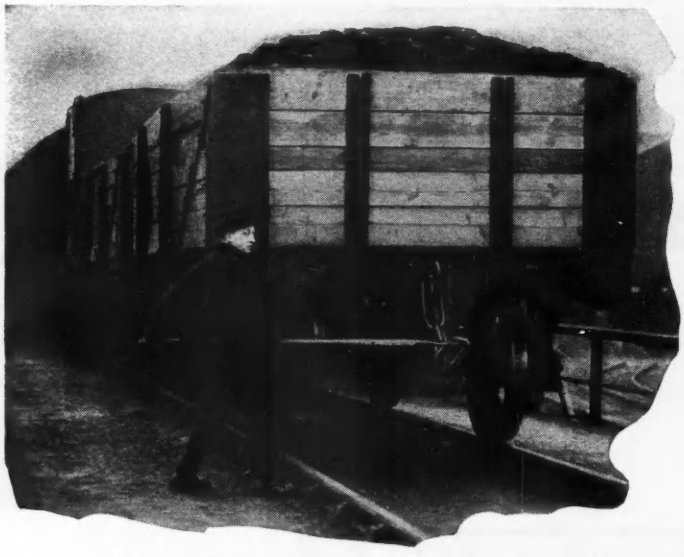

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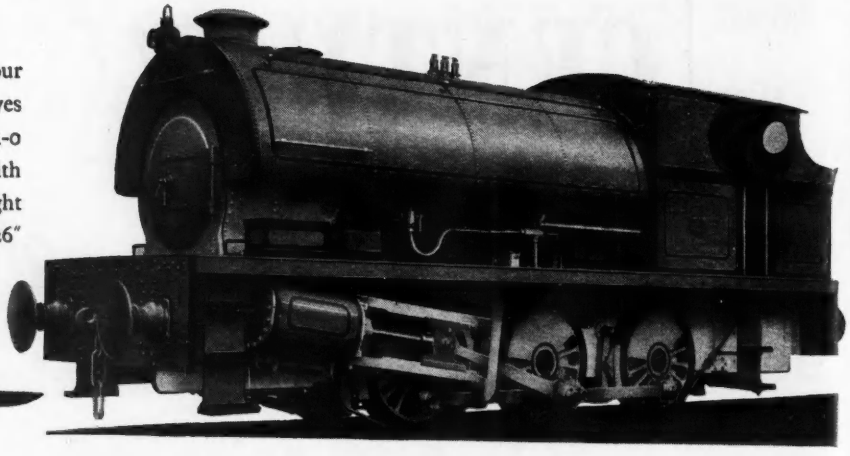

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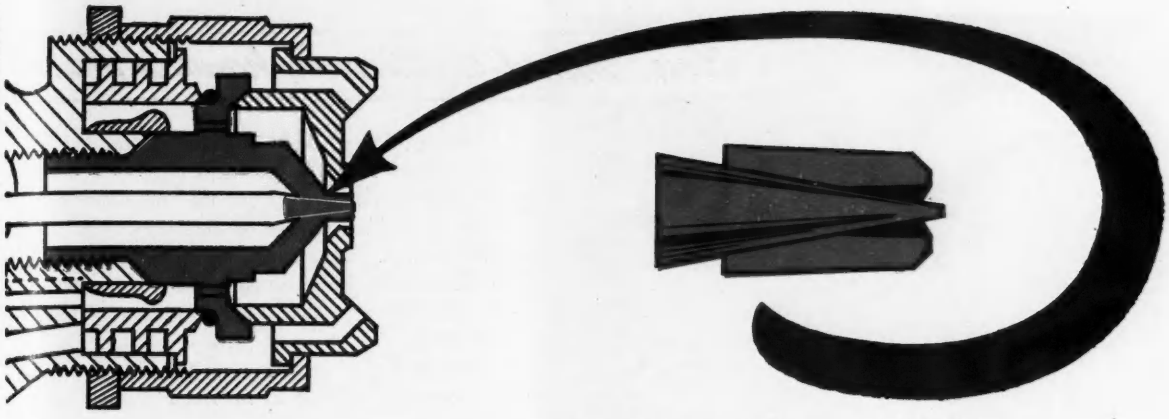

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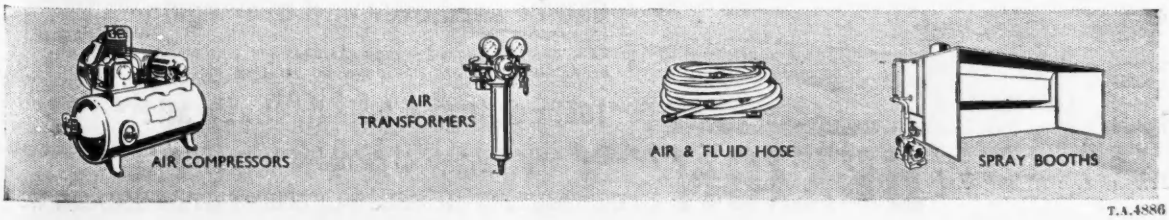

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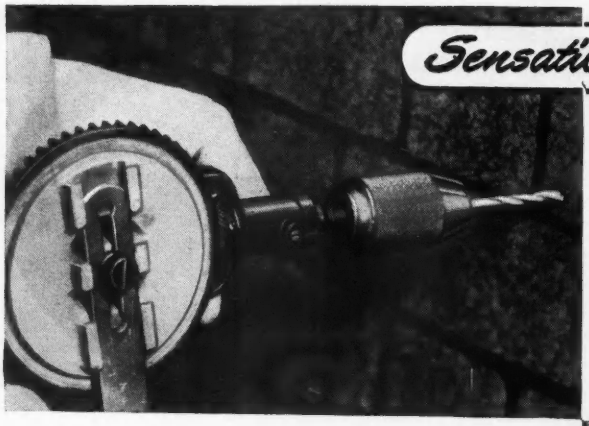

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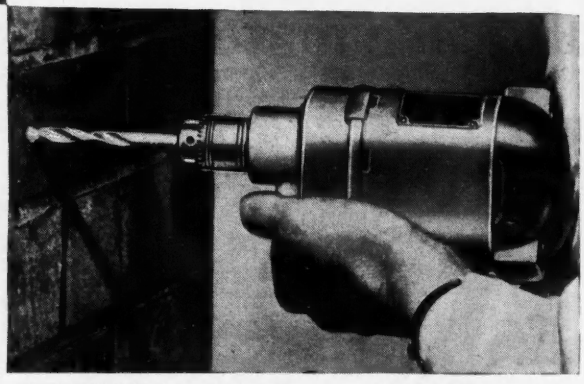

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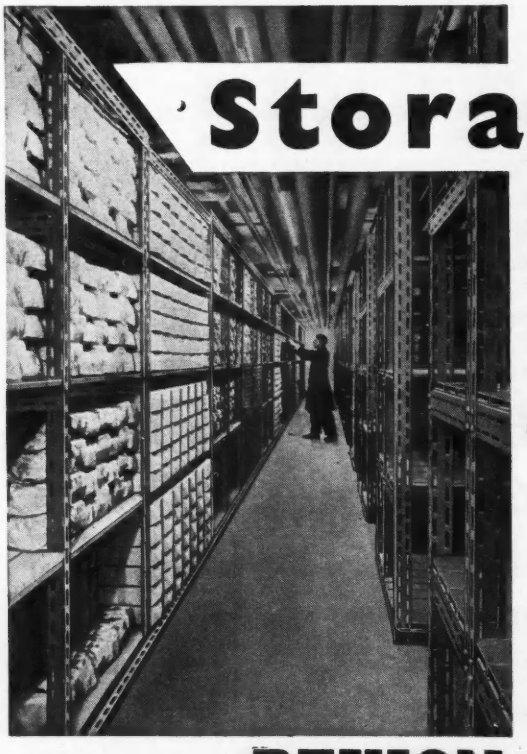

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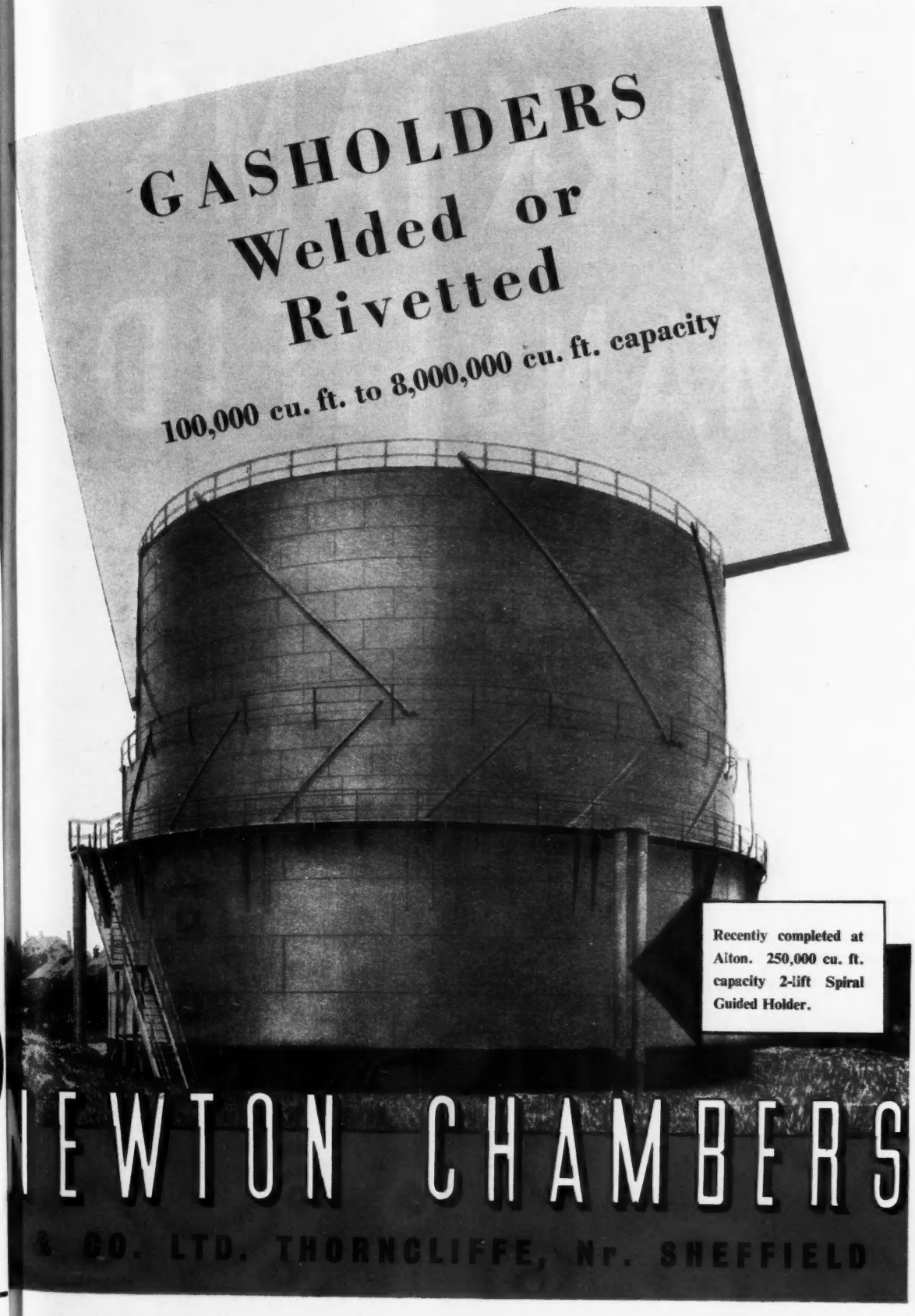

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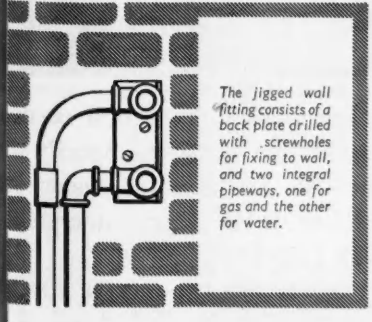
20,000 Ascot Jigged Wall Fittings cheapen installation

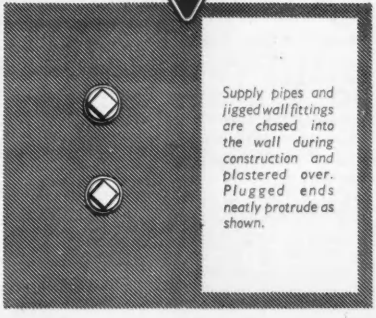
44 housing authorities have already adopted the jigged wall fitting. Over 20,000 have been installed. Housing authorities have adopted it because it provides at extremely low cost the means of obtaining an alternative hot water supply for the kitchen. *Tenants particularly appreciate this convenient service — which supplements the solid fuel heating system, especially in the summer, and at the same time saves money and fuel.*

The jigged wall plate takes the Ascot 503 range of heaters and the Ascot RS52/1 boiling water heater.

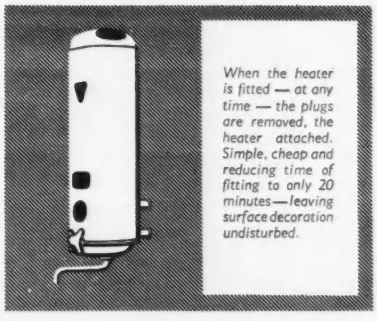
ASCOT



The jigged wall fitting consists of a back plate drilled with screwholes for fixing to wall, and two integral pipeways, one for gas and the other for water.



Supply pipes and jigged wall fittings are chased into the wall during construction and plastered over. Plugged ends neatly protrude as shown.



When the heater is fitted — at any time — the plugs are removed, the heater attached. Simple, cheap and reducing time of fitting to only 20 minutes — leaving surface decoration undisturbed.

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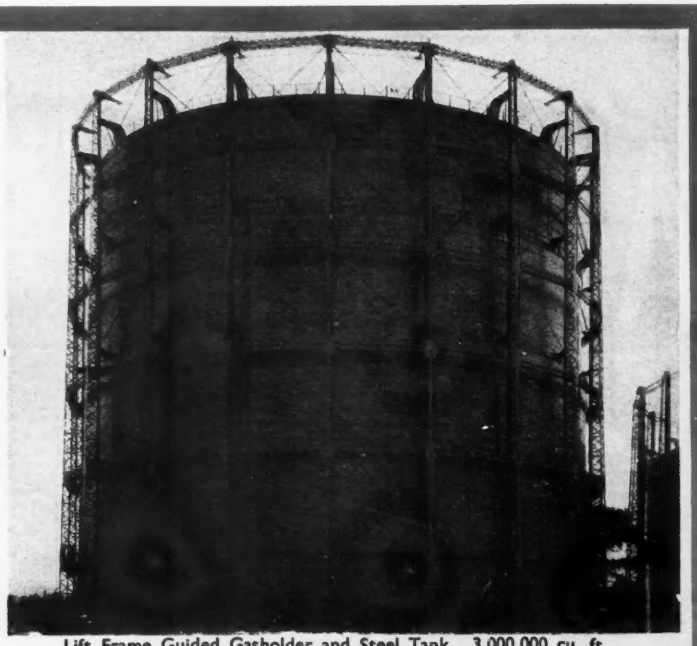

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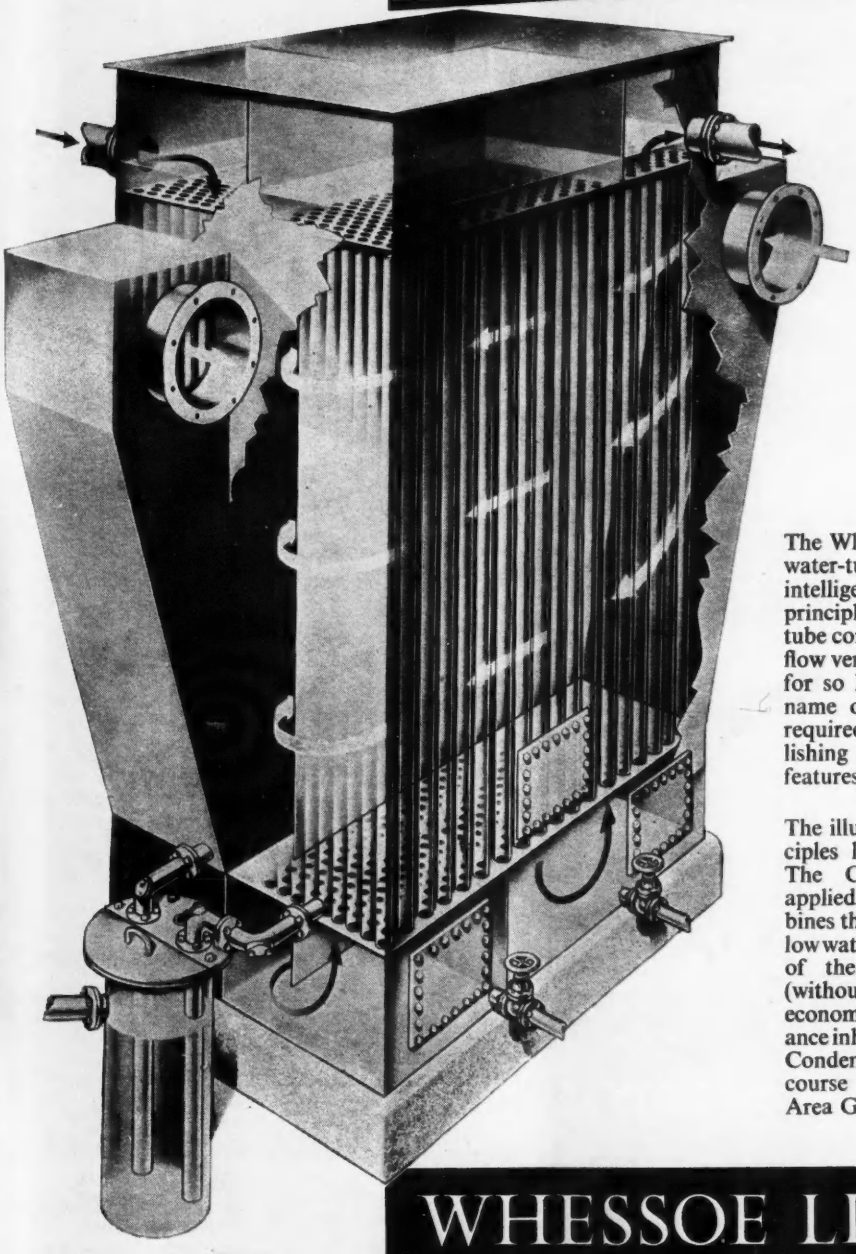

The Whessoe CROSS-FLOW vertical water-tube condenser entails the intelligent application of the design principles established for the horizontal tube condenser, to the type of parallel-flow vertical tube condenser which has for so long been associated with the name of Whessoe. Many problems required solution before finally establishing the operating principles and features of this new Whessoe unit.

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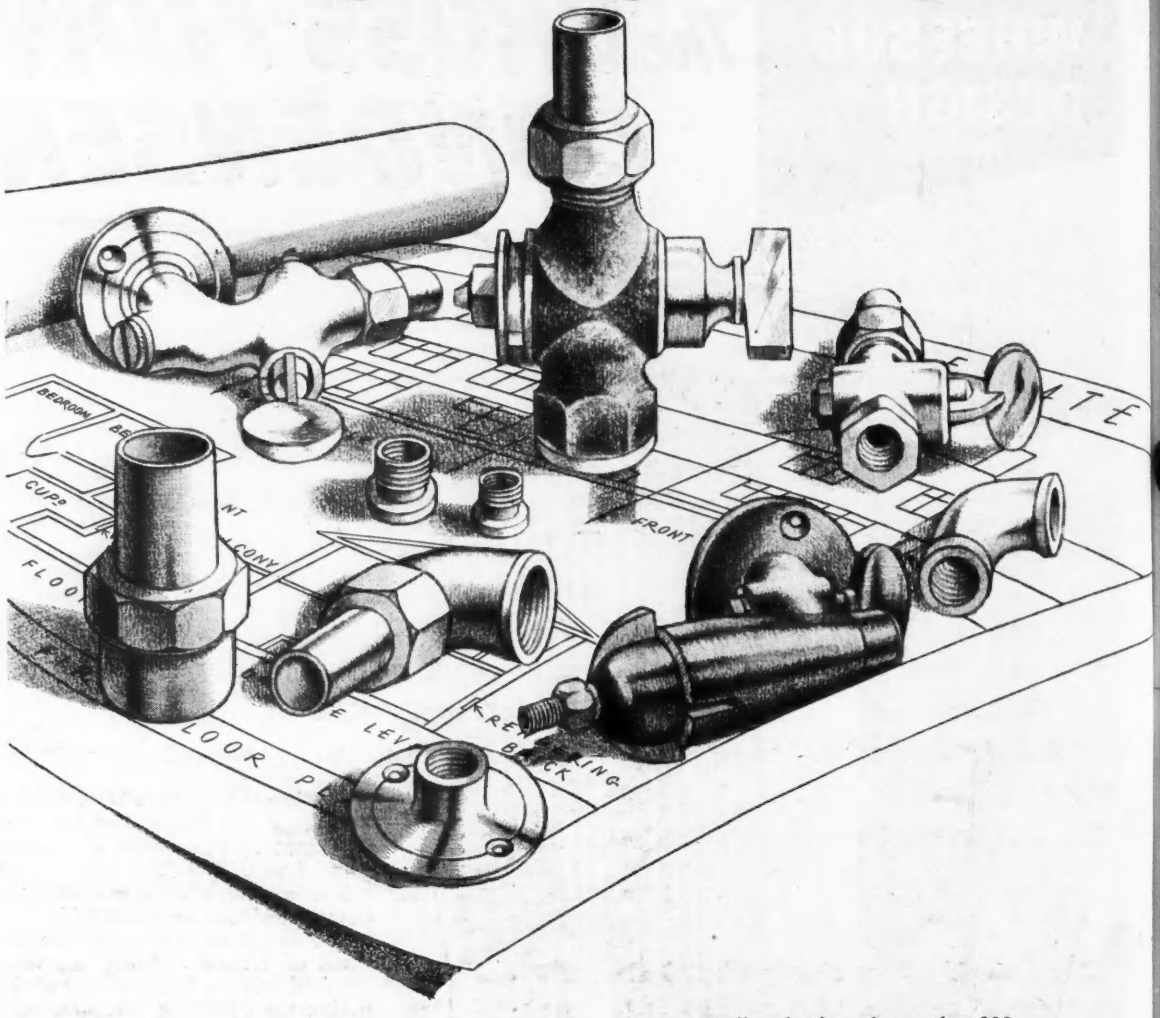

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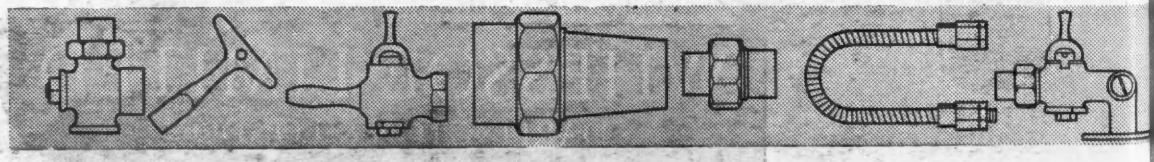

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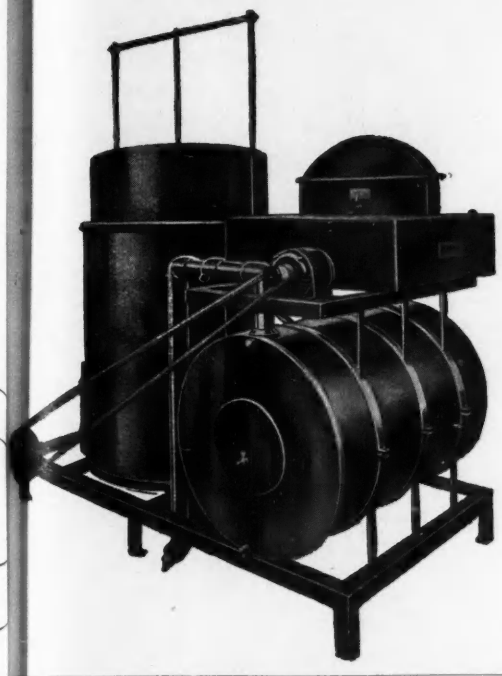

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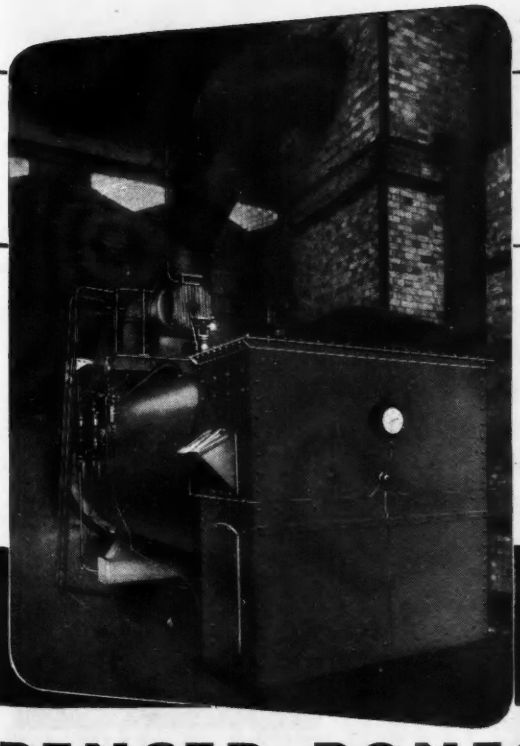

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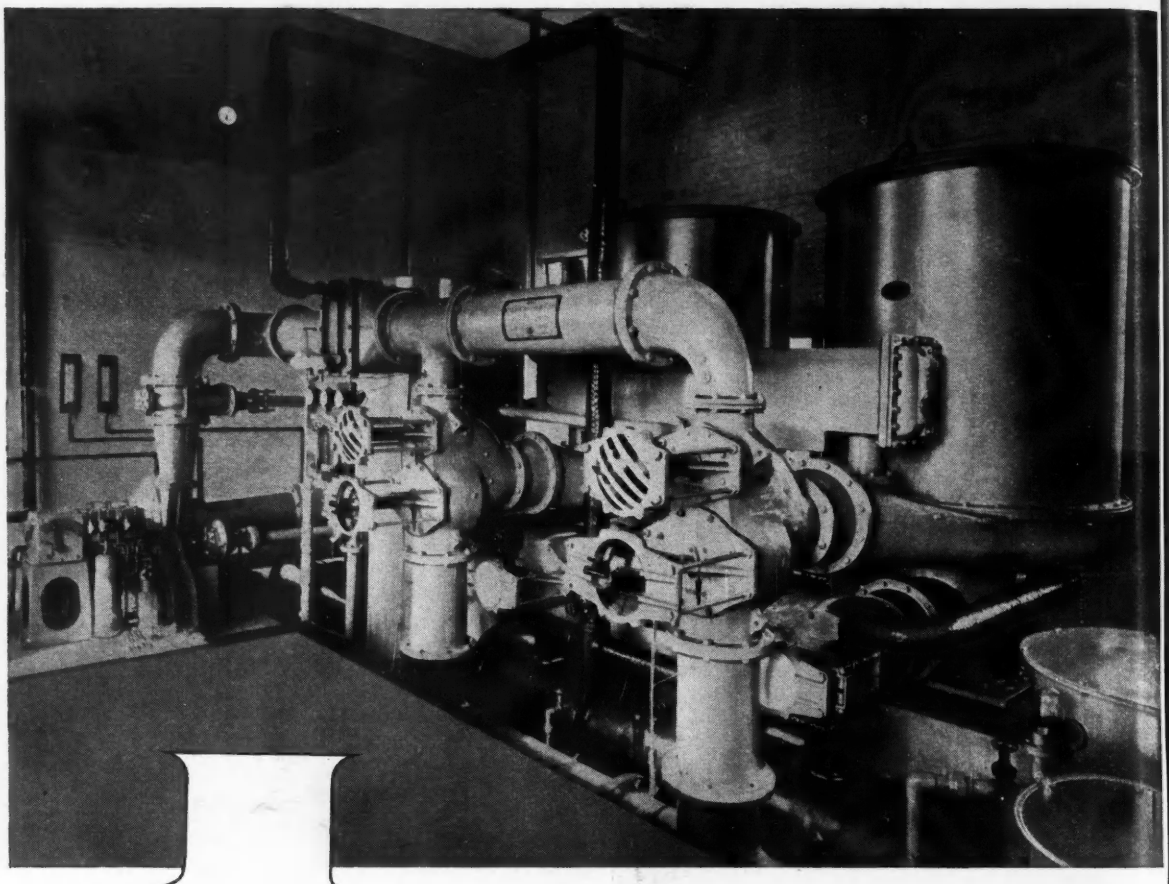

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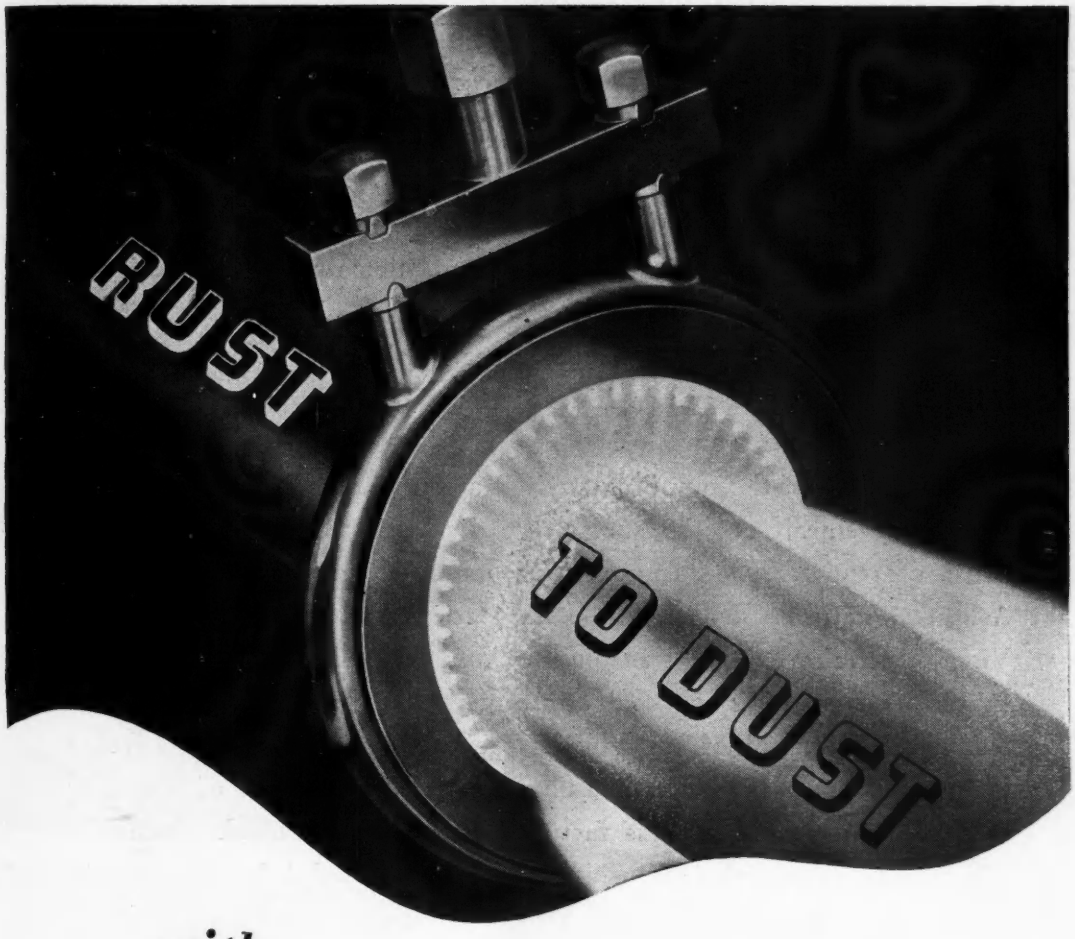

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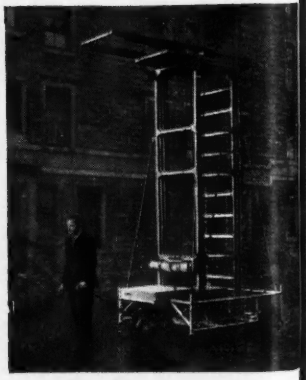

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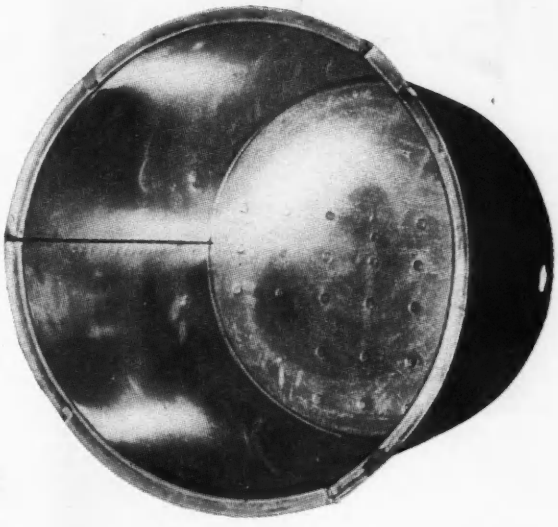

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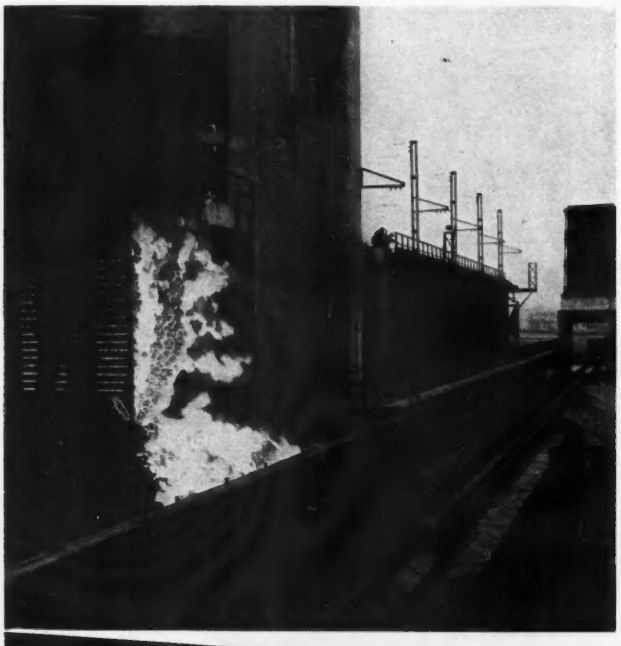

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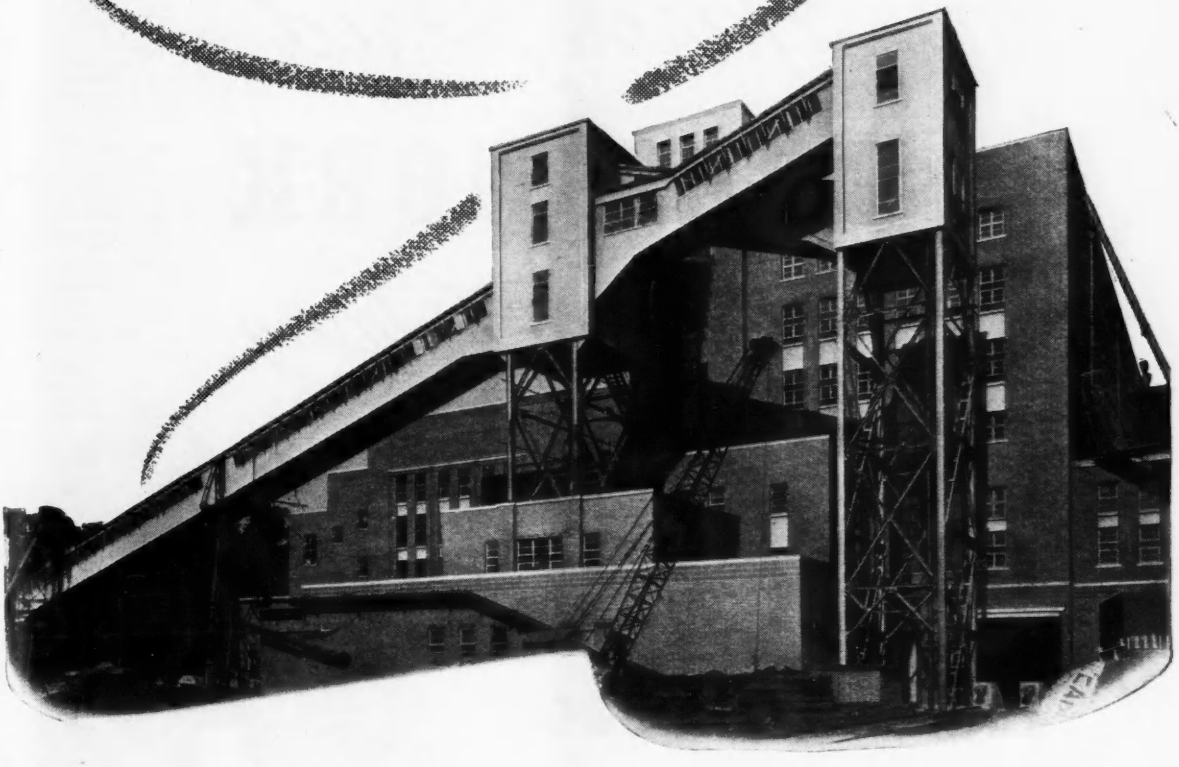

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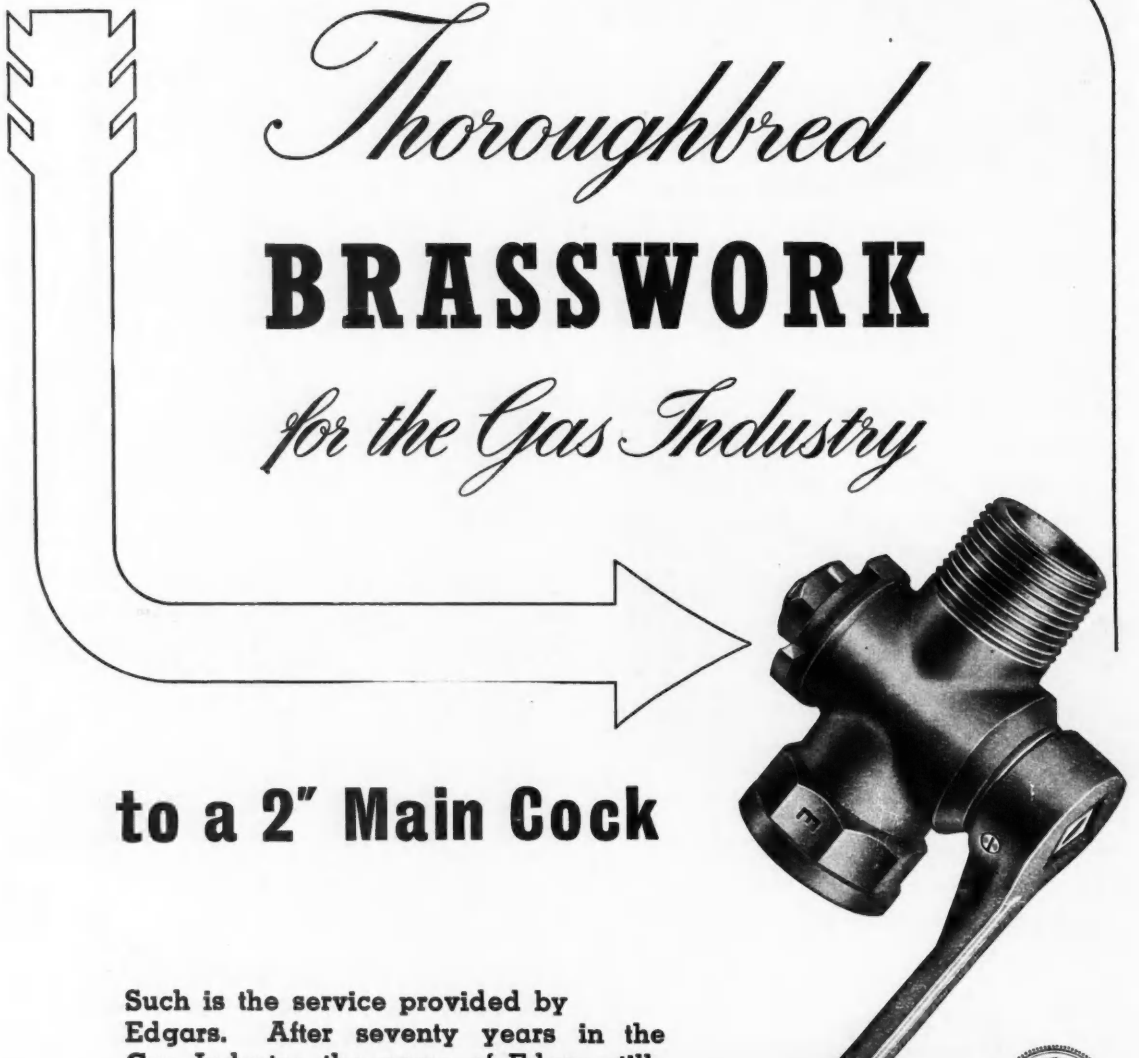

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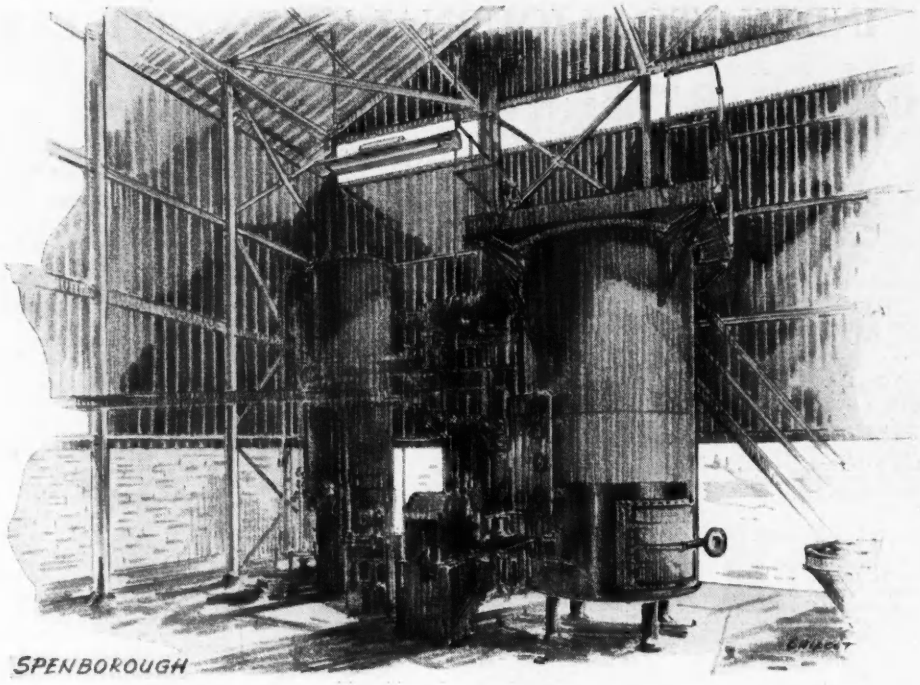

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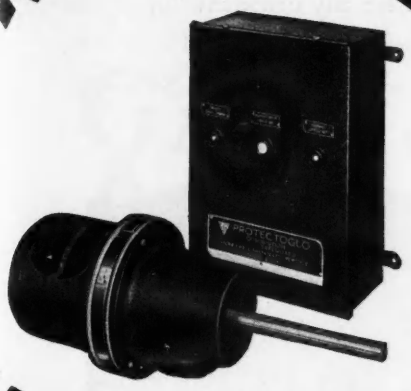

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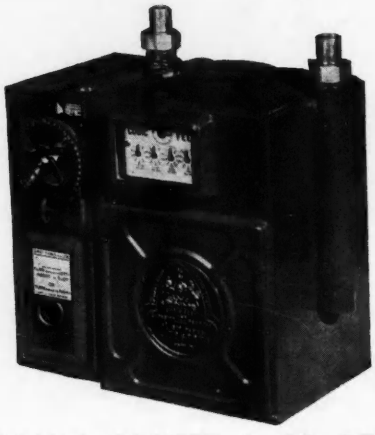

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GAS JOURNAL

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PEAK LOAD COSTS

THE first impression of the paper by Dr. J. Burns and Mr. L. J. Clark at the research meeting of the Institution of Gas Engineers is that it is a continuation of the invaluable contribution made to the study of the effect of peak loads on the cost of gas begun by Mr. F. M. Birks in 1949 and followed up by Dr. Burns himself in June, 1951. As Mr. Henry Jones reminds us, the subject is still eminently topical. Peak loads are associated with space heating in which both gas and electricity are called upon to meet the demands of cold weather and for general seasonal 'topping-up.' But while our electrical friends find that peak loads, aggravated by so seasonal and so variable a demand as that for space heating, strain them to breaking point, the gas industry need not be reluctant to accept the space heating load provided that it is kept within the limits of plant capacity and is charged at a price which will cover costs. And those costs, as Dr. Burns shows, can be very largely spread out over the main load. There will no doubt always be a delicate balance between averaging the peak load cost and charging it individually to the peak load consumer—always a difficult task, and, to do it accurately, an impossible one. There was, of course, the alternative of filling up the troughs by offering promotional terms in times of low demand—the 'negative' peaks.

Mr. Jones suggests that the operational engineer should forget about capital costs, indeed that he is bound to do so. Like the master of the vessel in Mr. Jones' illustration (our report of the discussion is published on later pages) he must make the best of the equipment at his disposal. It is from this point of view that Mr. Hawthorn's contribution to the discussion must be regarded. He suggests that much can be done to meet the peak load without installing special plant. The plan of campaign laid out for the new Swan Village works is of great interest. By manipulating the operation of the vertical retorts with dilution by externally produced blue water gas or producer gas and varying the quality of the fuel supplied to the mechanical producers an emergency increase of some 18% is to be obtained. The only 'peak load plant' would seem to be the fifth mechanical producer added to the four necessary to normal working.

We can imagine combinations other than those envisaged for Swan Village which might produce an equally satisfactory result. More than once increases of the order of 20% have been obtained for comparatively short periods in vertical retorts alone by selecting coal supplies to the retorts, turning, say, from run-of-mine to nuts, and by screening the coke to producers. Such a method will meet short-term peaks without any additional plant at all, but, of course, its possibility is dependent on a favourable fuel situation which is apt to be lacking today—to put it mildly. There is, however, another possibility which is worth consideration. If a given retort house is run easily on normal load—at, say, combustion chamber temperatures a little below normal—production might be 10% below normal, without great loss of thermal efficiency, and 20% below what could be obtained without great risk by increasing temperatures (and steam admission) to the safe limit. True, the plant would be a little bigger than normal in rated capacity, but the extra cost would be in the cheap middle setting and not in the costly ends; and to that extent the extra cost would represent that of installing peak load plant.

We wonder, too, whether the combination of water gas, with or without oil, and coal gas would not give as great a flexibility as that of producer gas and coal gas. It has been suggested that the retort setting would be fired by blue water gas. Such a combination would have the advantage of not loading the town gas with inerts, the automatically operated water gas machine would take the place of the mechanical producer, and the control of the heating of the retort bench would be at least facilitated. This combination could be developed into a complete gasification set using none but long-established techniques, especially if the distribution

system permitted some flexibility in the declared value of the town gas. Mr. Finlayson raised again in forceful manner the question whether we are to remain a two-fuel industry. One wonders whether, if we are, we should not make coke in coke making plant and gas in gas making plant, treating in the latter coke as very decidedly a by-product. After all, Mr. Birks in the first paper of this 'series' made the point that coke in the consumer's cellar was the best means of storage against the winter load.

We may here turn aside to Appendix 2 and question whether the dilution of vertical retort gas by externally produced blue water gas is justified. To get at the cost of making the same number of therms in the verticals alone direct at 500 B.Th.U. we added to the cost of the plant wages and maintenance for the additional plant required (though it is doubtful whether any additional plant would in fact be required) and we came to the conclusion that total production costs would be 9.311d. against 9.548d. in the paper and the total cost 11.5d. against 11.655d. in the paper. No doubt a similar reduction could be made with intermittent verticals. An interesting further exercise was to adopt these figures to calculate the cost per therm of making gas in the one process at 475; we found further reductions to 9.16d. for production and 11.325d. per therm total cost. And is it absolutely certain that London cannot be supplied under 500 B.Th.U. per cu.ft.? Incidentally this question raises the reflection whether the reduction of calorific value (for which legal powers would no doubt have to be sought) would not be a better method of dealing with the short-term emergency than reduction of pressure.

It will be interesting to hear what reply is given to Mr. Finlayson's criticism of the estimates of capital cost per million cubic feet daily capacity of the several carbonising systems. If these are adjusted in the sense which he suggests there would be further interest in the possibilities in manipulation of plant of existing types. This, of course, is not to detract in any way from the appreciation on all sides of the investigations pursued by Dr. Burns and his staff into the possibilities of oil-gas and other methods of meeting the peak load. Mr. Booth's mathematical treatment of the incidence of raw material costs on methods of dealing with load variations is likely to repay careful study.

The place of the gasholder in gas supply economy was admirably set out and discussed. The gasholder has been regarded as the badge of the gas industry's ability to store its product while its rival has no such facility. But it is rapidly being recognised that storage can only deal effectively with short-term variations and that the cost of these structures has become so great that their capacity must be very carefully scrutinised. To find that 47% storage is sufficient for a vast, closely integrated area like that of the North Thames presents a very different picture from the old comfortable rule-of-thumb assumption that 18 hours (or 12 or 24) average demand of the maximum day would meet every requirement.

No criticism in detail will prevent anyone from regarding the paper as other than a most valuable contribution to the economics of town gas production. It provoked a discussion of the very highest quality. Peak load gas is, and must always be, sold at a price very much below the cost of its production seen in isolation. The attainment of a favourable balance between the base load market and its several divergents must be the aim of sales policy. Only the resumption by the industry of its full freedom of propaganda and selective sales promotion can enable it to approach a solution of the problem. But policy must be based on a sound knowledge of the facts on the production side, a knowledge to an appreciation of which this paper and its predecessors in the series go a long way.

MEMORIES OF BRUSSELS

THE EASTERN SECTION of the Institution of Gas Engineers did well to devote its November meeting to impressions of last June's Brussels conference of the International Gas Union by three of its members who were privileged to attend, and especially to select three members with such widely different interests—liaison, works visits, and technical. Never was it more true that a good time was had by all. If our report of the Eastern meeting on other pages of this issue omits some of the more personal remarks it is solely for lack of space. As Mr. Parkinson said, it was no good pretending that they did not enjoy themselves, because they certainly did, and they succeeded in imparting to the less fortunate members who were unable to attend many vivid impressions of a memorable week. Mr. Ault thrilled us with his account of the royalty of the welcome extended to all the visitors, the elaborate precautions that were taken by large forces of armed mobile police to ensure their safe travel through the principal cities, and the fine detail with which all the works visits were arranged. Mr. Evetts, naturally more restrained because of the highly technical aspects with which he elected to deal, was obviously no less impressed with what he learnt during his stay in Belgium. Several who took part in the talk—it was less formal than the usual 'discussion'—were also at the conference and added to the fund of reminiscence; others, not so fortunate this year, expressed determination to join the next international party, most likely in the United States in 1956.

INDUSTRIAL AESTHETICS

AN INTERNATIONAL CONGRESS OF INDUSTRIAL AESTHETICS is to be held in Paris on September 15 and 16, 1953. The promoters, in their announcement of this project, remark that the association of the words 'æsthetic' and 'industrial' have already ceased to surprise. The new methods of industrial technique and the continued growth of invention, transforming the conditions in which we live, are creating new values, modifying our tastes. In this era of the new techniques upon which we are entering the machine is producing new forms, creating new styles, instigating an æsthetic of its own. This evolution is seen not only in the home and in the street, among the objects which serve our leisure, our hygiene, our comfort, or among means of locomotion and in urban architecture, but also in workshop, office, and laboratory. The factory ceases to be an example of industrial ugliness. Patient research on the planning of works, the arrangement and design of machines, the heating, lighting, and ventilation of workshops, the colouring of walls and floors, the sup-

pression of noise, odours, fumes, and dust, tend to transform the climate of the factory and work together for the improvement of production, the upgrading of work, the establishment of a new social atmosphere.

Are we moving on the right lines? What are the new forms produced by our mechanised arts which will capture the favour of the customer? To what extent has the new style permanent value? What are its laws? How shall we define the æsthetic of our age? These questions are not merely theoretical. They present a practical and urgent problem to us all, manufacturers, salesmen, and consumers. Specially interested are the principal artisans of this transformation—industrial leaders, engineers, architects, stylists—and also the distributors who for markets at home and abroad have the double task of guiding the tastes of their customers and registering the reactions of the markets for the information of producers.

The Congress is intended to provide a platform upon which these questions can be discussed. M. Combet, Director-General of Gaz de France, has accepted the Presidency of the Congress. It has the approval of the Institute of Industrial Aesthetics directed by M. Viénot. It has the patronage of the President of the Republic, the President of the Council, and that of several Ministerial Departments. It is encouraged by the success last year of the exhibition in England organised by the Council of Industrial Design.

When the programme of the 1953 Congress is definitely establised and its committee of patronage fully constituted with the participation of eminent French and foreign personalities, a further announcement will be made. The Secretary of the Congress is M. Levanthal, Director of the Society for the Development of Industry, Gaz de France, 62, rue de Courcelles, Paris 8e.

Diary

Dec. 12.— Scottish (Western) Juniors: Film night; 'Construction of a new gasholder at Alloa Gasworks,' D. C. Dow, Alloa.

Dec. 12.—London Juniors: Address by J. S. Barnes, LL.B., Solicitor, North Thames Gas Board, 178, Edgware Road. 6.30 p.m.

Dec. 13.—Manchester Juniors: President's Day, Visit to Salford undertaking.

Dec. 13.—Western Juniors: Visit to Torquay works; 'Mains Extensions in relation to Housing Development,' R. Pratt, Taunton.

Dec. 16.—London Juniors: Alternative evening visits, 8.30 p.m. Newspaper Offices:—*The Times,* and *Daily Graphic.*

Dec. 16.—Midland Juniors: 'Use of Gas in the Manufacture of Pottery,' K. Davis, Stoke-on-Trent.

Dec. 16.—London and Southern Section, I.G.E.: 'The Supply, Transport and Distribution of Coal to the South Eastern Gas Board,' A. G. Gostelow: 17, Grosvenor Crescent, S.W.1. 2.40 p.m.

Dec. 18.—Institution of Heating and Ventilating Engineers: Joint meeting with Institute of Fuel, East Midlands Section, at 6.30 p.m.; 'Plant Control through Instruments,' J. E. O. Breen.

DURHAM DIVISIONAL COAL BOARD has approved a four-year plan for building pithead baths and canteens at a cost of more than £1,500,000. The plans include baths at 19 collieries, pithead baths and canteens at 10 collieries, and canteens at seven. The completion of the programme will mean that nearly 88% of the miners in the county will have bathing facilities, and there will be canteens at 124 pits.

Personal

Mr. J. Parry, General Manager of Crypto, Ltd., one of the Lancashire Dynamo group of companies, has been appointed to the board of directors.

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Mr. A. E. Heath, of the Leamington Spa undertaking of the West Midlands Gas Board has been appointed distribution foreman to the Milford Haven and Neyland undertaking of the Wales Gas Board.

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Mr. R. O. Roberts, Engineer and Manager, Connah's Quay and Hawarden undertaking, has taken over, in addition temporary responsibility for the Buckley undertaking (Clwyd and Deeside group) of the Wales Gas Board. **Mr. R. A. Davies** has been appointed Manager of the Llanidloes undertaking (Montgomeryshire group).

◇ ◇ ◇

Mr. Fred Ellison has, on medical grounds, resigned from his position as a Joint Managing Director of Scottish Tar Distillers, Ltd. Mr. Ellison, who has acted as Deputy Chairman and a Joint Managing Director since the formation of the company in 1929, will continue to serve as an ordinary Director.

◇ ◇ ◇

Mr. E. H. Badcock and **Mr. A. E. Jones,** who work together in the Coke Department of the North Thames Gas Board, passed the recent final examination of the Association of Incorporated Statisticians. Mr. Jones won the market and opinion research award of 20 guineas given by the Market Research Society. In addition, both received letters of congratulation from the Chairman of the Education Committee of the Association on 'an extremely creditable set of papers.' In 20 years in the department, they have had experience in all sections of its work and latterly have been engaged, under the direction of the Coke Manager, on statistical problems and investigations in connection with coke supplies and sales, working in close liaison with the staff of the Chief Engineer's control room.

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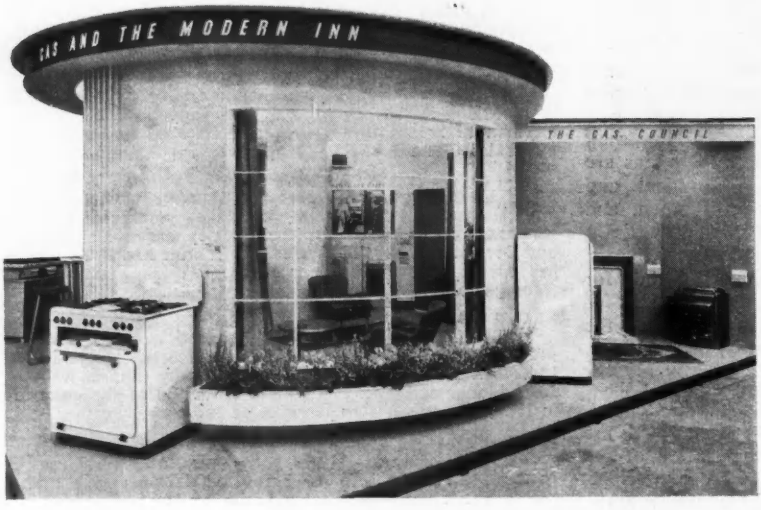
Mr. Alexander Richardson McBain, C.B., O.B.E., who, as briefly reported last week, is to succeed Mr. Owen Guard as Chairman of the Southern Gas Board on January 1, was born in 1887. He was educated at Glasgow High School and Technical College, Glasgow, and entered the civil service in 1906. For his services in the War Office during the first world war, Mr. McBain received the O.B.E. in 1918. He transferred to the Board of Trade and when the Ministry of Supply was set up in August, 1939, was appointed first Director of Finance. His immediate concern was the building and equipping of 30 ordnance factories throughout the country. In 1944 when Principal Assistant Secretary at the Ministry he was appointed Director of Disposals and was responsible for setting up, through trade channels, a system of sales of Government surplus stocks. He travelled to Egypt and the Continent to organise disposal methods and in recognition of his work was awarded the C.B. in 1946. From January, 1946, to December, 1948, he was Under Secretary (Munitions Supplies), Ministry of Supply. Since then Mr. McBain has been a part-time member of the Southern Gas Board and from October, 1950, has been a part-time member of the Iron and Steel Corporation of Great Britain. As United Kingdom representative he attended North Atlantic Treaty talks in America in 1950 to discuss co-ordination of production. Again in 1951, when Great Britain and the Dominions met in Australia and New Zealand to discuss co-ordination of production for defence, he represented the United Kingdom. At the request of the Ceylon Government, Mr. McBain interrupted his journey home from these talks to discuss the financial control of State-owned industries. More recently he has acted in an advisory capacity with the Ministry of Supply in reviewing the efficiency of ordnance factories. Mr. McBain will continue to give his services to the Iron and Steel Corporation of Great Britain as a part-time member.

GAS AND THE MODERN INN . . . *Gas Council's Attractive Stand at the Brewers' Exhibition*



THE Gas Council's stand at the Brewers' Exhibition, Olympia (November 24-28), concentrated attention upon the wide range of modern gas and coke appliances for hotels and public houses. The display included cookers, fires, water heaters, central heating plant, refrigerators and catering equipment for both snack-bar and restaurant.

Ample supplies of hot water are essential for the modern bar or restaurant, and five of the most up-to-date examples of gas heated appliances of this kind were on view. Space heating is another essential, and gas fires, radiators, overhead heaters and coke fires could all be inspected on the stand, as well as central heating appliances. Coffee sets and café sets were also displayed to attract those who have to provide facilities for the immediate and rapid service of hot drinks.

German Team Visits South Eastern Board

THE South Eastern Gas Board entertained on November 13 and 14, the German team which had taken part in the International Kitchen and one of the German home service staff who was visiting this country. The team, accompanied by Mrs. Mair Jones (Chief Home Service Adviser) visited the Streatham Hill showroom, where they were received by Mr. A. G. C. Ridley (Sales and Service Manager, Metropolitan Division), Miss J. Lyons and Mrs. A. M. Pigott (Divisional Home Service Advisers, Metropolitan and East Surrey Divisions) and other members of the home service staff.

The visitors were interested in the up-to-date showroom and demonstration theatre and spent some time examining the various gas appliances. They said that in Germany, instead of having demonstration theatres, they have large kitchens where the home service staff can hold practical classes for 20 housewives or young people.

Later, the party left for the Wimbledon showrooms where they were received by Miss F. M. Cruttenden (Divisional Home Service Adviser, West Surrey Division) and saw a washing demonstration which was being given in the showroom. The German ladies were extremely interested in the drying cabinet as they had not seen one before. Apparently they do not use drying cabinets in Germany.

The guests were entertained at lunch by Mr. M. E. Wulstan Atkins, after which they visited the Croydon showrooms and were shown the latest gas appliances. Dame Vera Laughton Mathews was at Croydon to thank the German team for their contribution to the success of the International Kitchen and to wish them a safe journey home.

The remainder of the time was spent in visiting Buckingham Palace to see the changing of the guard, and the Tower of London.

DUTCH COOKERY AT WOLVERHAMPTON

THE appetising cooking aromas which emanated from the demonstration platform at the gas showrooms at Wolverhampton on November 6 were of Continental flavour. They arose from the preparation and cooking of a variety of every-day Dutch dishes by Miss H. A. M. Halverhout, the Homecraft Adviser to the Amsterdam Gas and Electric Undertaking.

Mr. F. C. Briggs (Divisional General Manager of Wolverhampton Division of the West Midlands Gas Board) opened the meeting by introducing Miss Halverhout to the crowded audience, every available chair being occupied. Many people desirous of attending had unfortunately to be refused admission, as it had been found necessary owing to the response to admit by ticket only. The good fortune of the Wolverhampton people in being afforded an opportunity to receive a demonstration by such a master of her craft as Miss Halverhout was expressed by Mr. Briggs, who explained that her presence in this country was due to the fact that she had represented Holland in the International Kitchen held at the Royal Festival Hall under the auspices of the Gas Council.

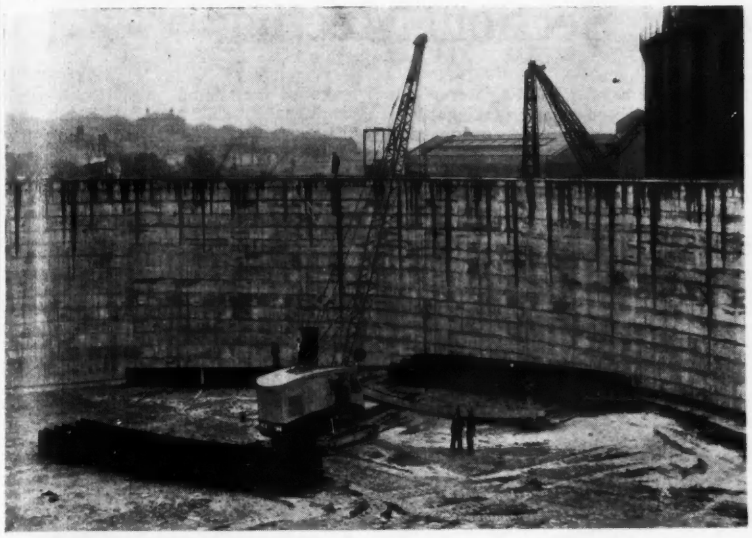
Oven Rarely Used

Miss Halverhout having thanked Mr. Briggs for the opportunity to be present, then proceeded with her demonstrations. One of the notable differences between the methods employed by the Dutch housewife and that of her English contemporary is that in Holland the oven is rarely used, as 90% of Dutch dishes are cooked on the hotplate. Concluding a most interesting and instructive demonstration, Miss Halverhout asked for any questions or criticisms from those present and she was very quickly called upon to answer diverse enquiries as to the cooking, housekeeping and shopping problems of the housewives in her country.

Mr. Briggs, on behalf of the West Midlands Gas Board, then presented Miss Halverhout with some cut glass as a souvenir of her visit to the Black Country. This was reciprocated by Miss Halverhout presenting Miss O. Humphries (Area Home Service Adviser to the West Midlands Gas Board) and Miss Jean Calvert (Chief Home Service Adviser, Wolverhampton Division with a gift of ginger bread modelled in the form of St. Nicolas, the Dutch equivalent of Father Christmas, while Mr. Briggs received a very fine brand of Dutch cigar.

Miss H. A. M. Halverhout, Homecraft Adviser to the Amsterdam Gas and Electric Undertaking, demonstrates Dutch dishes to a Wolverhampton audience.

SHEFFIELD'S NEW 8 MILL. HOLDER



THIS photograph (for the reproduction of which acknowledgment is made to the East Midlands Gas Board), taken on the site of the new 8 mill. cu.ft. holder which the Heavy Construction Division of Newton, Chambers and Co., Ltd., is building at Meadowhall, Sheffield, is a striking illustration of co-operation between two Thorncliffe departments. The N.C.K. Model 304 excavator, made at the Warren Lane factory, is equipped for use as a crane and is standing inside the 230 ft. diameter, 45 ft. high wall of the gasholder tank. The N.C.K. crane was lifted over the wall in pieces by the Scotch derrick crane seen in the background. It was reassembled, tested, calibrated, and painted within a week, and its purpose is to handle materials which, due to shortage of space on the site, will be stored on the floor area of the tank. The gasholder is a repeat order and will stand alongside the world's biggest spiral guided gasholder in steel tank (part of which can be seen on the right) built by Newton, Chambers and Co., Ltd., in 1937.

Scottish Juniors Visit Govan Ironworks

MEMBERS of the Scottish Junior Gas Association (Eastern District) led by the President, Mr. T. R. Cameron (Galashiels), assembled at the works of Wm. Dixon, Ltd., at Glasgow, on November 8 and were met by the Works Manager, Mr. Howitt.

First a visit was paid to the blast furnaces. The working of the furnaces was explained and it was stated that some 20 odd tons of metal was being produced per furnace every four or five hours.

The party then inspected the Simon-Carves coke oven plant. This plant is of the under-jet type and consumes roughly 50% of the coke oven gas produced.

Following this the visitors were shown the by-product plant for the manufacture and rectification of benzole and the production of sulphate of ammonia. The benzole plant was stripping about 3 gall. per ton of coal carbonised and the sulphate plant was producing about 6 ton 10 cwt. of salt per day.

At the end of the tour Mr. Cameron thanked Mr. Howitt and his staff for their consideration.

Approved Designs of Lamp Posts.—The Council of Industrial Design, having recently announced that it has been invited by the Ministry of Transport to maintain a list of approved lamp post designs, wishes to make it clear that earlier designs passed by the Royal Fine Art Commissions still qualify along with those on the Council's list for a grant from the Ministry towards the cost of trunk road lighting schemes.

Carlisle 'At Home'

AT the invitation of the Western Group of the Northern Gas Board, over 200 ladies representing the various women's organisations in Cumberland and Westmorland, attended a highly successful 'At Home' in the County Hotel, Carlisle, on October 29.

The object of the function, at which Mrs. Eileen Murphy, Home Service Adviser to the Gas Council, was principal speaker, was to inaugurate the lecture-demonstration service and kindred facilities, which will in future be available to all consumers in the area. The event also afforded the audience an excellent opportunity of meeting the staff of home service advisers who are to operate the service.

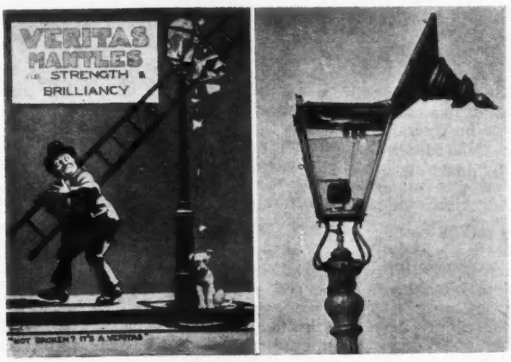
Miss Mary Strong, Group Sales Manager, presided, and introduced Mr. A. R. Croft, Group General Manager, who extended a welcome to the audience on behalf of the Board and also outlined recent developments which had taken place in the Group's area of supply. Miss Strong then gave a summary of the programme of lectures and demonstrations which will be available to all the organisations, and later introduced the main speaker, Mrs. Eileen Murphy, who gave an informal address entitled, 'Houses into Homes'.

Salaries of Gas Staffs

THE NATIONAL JOINT COUNCIL for Gas Staffs has agreed that graduated increases on existing salary scales for men, ranging from £5 to £20 per annum, shall operate from January 1, and that 80% of these increases (£4 to £16) shall apply to salary scales for women from the same date. The award relates to persons employed in administrative, professional, technical, and clerical grades.

Agreement has also been reached between the Gas Council and the Confederation of Shipbuilding and Engineering Unions providing for an increase in wages of 2d. an hour for works maintenance craftsmen employed in the gas industry. The increase took effect as from October 19, 1952.

FAMOUS ADVERTISEMENT RECALLED



A recent photograph in the *Northern Daily Telegraph* recalled memories of one of the most famous advertisements associated with the gas industry. In spite of the damage wrought by the gale to the hood of this lantern at Darwen, the Falk Stadelmann 'Veritas' mantles remained true to form—not one was broken!

INSTITUTION OF GAS ENGINEERS

Manchester Section Meeting

AN ordinary general meeting of the Manchester and District Section of the Institution of Gas Engineers was held at Huddersfield on November 14. Judging by the attendance, the decision to hold meetings on the Yorkshire side of the Pennines periodically, instead of Manchester, was a popular one.

At the luncheon which preceded the meeting, Mr. A. McDONALD, Chairman, acknowledged the support he had received from the members, and extended a welcome to Mr. G. E. Currier, O.B.E., who, as a member and Past President of the section, they were always pleased to see. They were especially honoured that Mr. Currier, as President of the Institution of Gas Engineers, had made a point of attending so many of their meetings. It was a great encouragement to have the support of a number of past Presidents, because, so often, once a man had served his year of office, he seemed to fade out gradually, but it was a feature of the Manchesters—and in fact of the gas industry—that they continued to give their encouragement and advice. Mr. McDonald had also a special word of welcome to the students who were present to receive their certificates, and in congratulating them on their success, expressed the hope that further successes would attend their efforts. Finally, Mr. McDonald intimated apologies on behalf of Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, and Mr. D. P. Welman, Chairman of the North Western Gas Board, who, unfortunately, were unable to be present.

After the Hon. Secretary, Mr. A. H. NICHOLSON, had dealt with the formal business of the meeting, the following new members were welcomed: R. B. Brown (Doncaster), A. S. Davis (Whaley Bridge), G. W. R. Holmes (Salford), G. Newton (Oldham), and K. Raistrick (Radcliffe).

Disappointing Results

Mr. CURRIER, after presenting Higher Grade certificates to successful students, said the examination results had again been disappointing. Perhaps the explanation lay in the legacy of six years of war. They were not exceptional, however, and were in line with other professions that held examinations. There was much leeway to make up and there was no reason or justification for complacency. The Institution examination scheme had been in operation since 1923 and the standards set had been consistently on the upgrade, this being a policy which he was sure was in accordance with the wishes of the majority of the members.

The last higher grade examination would be held in 1953, after which the new examination for associate membership would be introduced to bring it to the same level of qualifications as was required for the examination of the Institution of Mechanical Engineers and the Institution of Civil Engineers. It would be a hard course, taking seven years, leading to corporate membership of the Institution. The only other way would be by means of a university degree. For others who could not achieve that high standard of qualification, there remained the City and Guilds examination for the full technological certificate for gas engineering, manufacture and supply, a course which would take four years. Mr. Currier urged that all young men coming into the industry should make up their minds which course they would take, and aim for the highest qualifications possible, because it was certain that as the years went by competition would become keener and keener.

A paper on 'Town Gas Interchangeability and the Flame Hardening and Tempering of Wire,' was presented by Mr. A. R. WILSON, B.SC., Industrial Department, North Eastern Gas Board. A summary of this paper and discussion will be published later.

Mr. A. McDonald, Chairman of the Manchester and District Section of the Institution of Gas Engineers, photographed with the successful students who received certificates at the Huddersfield meeting.

FOUR ESSENTIALS

MR. J. R. W. ALEXANDER, President of the Chartered Institute of Secretaries, defined the four essentials of the professional man when he spoke at the annual dinner of the South Wales and Monmouthshire Branch of the Institute at Cardiff on November 21. 'There would appear to be four cardinal essentials for the professions and the professional man,' said Mr. Alexander. 'These are—learning, liberality, public spirit and integrity.'

The profession must command learning. It must have knowledge of a kind which would justify the trust and confidence of those who went to the professional man for advice and service. There must be liberality in the old sense of freedom of thought and spirit—the attributes of honour, graciousness, openmindedness, and sympathy. The professions must have that public spirit which was determined to put the public weal first and foremost. Integrity was an essential in its finest sense of seagreen incorruptibility.

Mr. Alexander said that today the chartered secretary was more than a keeper of secrets, his original function. The company secretary held a key position in the structure of world finance, commerce and industry; he grew in stature and value to the community day by day, as he became more and more entrusted with senior administrative posts. It was important to strive to ensure that the public conception of the secretary was in keeping with his modern function.

Today, the secretary was as much the guardian of the shareholder as he was the servant of the board. In the administrative field his impartiality and sense of justice were increasingly called into play in the public interest. It was essential to his new status, therefore, that he should enjoy the same freedom as, say, the lawyer and architect, to take part in the communal life, whether social, political, or intellectual, and to express his views with the same unfettered liberty.

The Southern Division of the South Western Gas Board has produced an attractive booklet entitled *Let's have a Party* for use during the festive season. The primary intention of the publication is to assist home service advisers in their presentation of demonstrations during the Christmas period. All the recipes have been supplied by home service advisers throughout the division, with the assistance of the divisional publicity department.

South Eastern Board's New Collier

DAME VERA LAUGHTON MATHEWS, a Member of the South Eastern Gas Board, performed the naming ceremony at the launching of the Board's latest vessel, the m.v. *Guildford*, at Burntisland, on November 17.

At a luncheon which followed, Sir Wilfrid Ayre, Chairman of the Burntisland Shipbuilding Co., Ltd., said that the name of the South Eastern Gas Board had become very well known among the workmen at the Shipyard as a result of fairly recent launches of ships for the Board. The design of the *Guildford* was the same as that of the *Croydon* which was launched in November, 1951, but this was because the building of the *Guildford* had followed so closely on the other. Progress was continually being made in improving the design of these ships and in enabling them to carry larger cargoes of coal.

Sir Wilfrid said that all the credit for the *Guildford* did not lie with the builder. Credit and appreciation were accorded those officers of the Board with whom he and his colleagues came in contact. He could not refer to them all, but would like to mention Mr. A. G. Gostelow (Coal and Shipping Manager) and Mr. Roy Wilson (Marine Superintendent) who had rendered much assistance on various problems which had arisen from time to time. Sir Wilfrid wished Captain T. W. Corney, M.B.E., the Master appointed to the new ship, every happiness and success in his new command.

Proud of Its Fleet

Mr. W. K. Hutchison (Chairman of the South Eastern Gas Board) said that the Board was proud of its fleet of ships. All of them, whether intended for going up the River Thames, above the bridges or below, were specially designed for the work of carrying coal to London and were handled by officers who were expert in this work. In the *Guildford* Mr. Hutchison stated that Sir Wilfrid Ayre and his colleagues had built another fine ship to the Board's requirements and he felt sure it would not be long before this new ship was employed in service, and earning money to repay the capital spent on it. Mr. Hutchison congratulated Captain Corney on his new appointment and wished him good luck and happy sailings in the *Guildford*.

Sir Wilfrid Ayre thanked Dame Vera Laughton Mathews for naming the new vessel and, in reply, Dame Vera expressed her pleasure at being asked to perform the ceremony and thanked the Board for the opportunity given to her. As Director of the Women's Royal Naval Service during the war, she was aware of the work carried out by ships of the Merchant Navy, which was of supreme importance to the nation.

Telegrams of good wishes were read by Mr. Hutchison from the Mayor of Guildford, all employees of the Board's Guildford works, and from the captains, officers and ratings of the 15 ships in the Board's fleet.

The company present at the launching included Rear Admiral J. H. F. Crombie, C.B., D.S.O., Flag Officer, Scotland, Col. F. E. Laughton, M.C., Lieut.-Cmdr. R. R. B. Mackenzie, M.B.E., R.N., Mr. R. H. Sandford Smith, Secretary of the Board, Mr. A. G. Gostelow, Mr. Roy Wilson, and Mr. R. M. Farror, Engineer of the West Surrey Division, in which Guildford is situated.

The new collier, the third vessel to be built recently for the Board by the Burntisland Shipbuilding Co., Ltd., is 264½ ft. long, 39½ ft. broad, and 18½ ft. deep, with a capacity of about 2,875 tons. Masts are arranged to telescope into the holds when the ship is navigating the low bridges of the Thames. Every member of the crew has a single-berth cabin. Machinery will consist of an 8-cyl. diesel engine developing 1,150 b.h.p. at 225 r.p.m., which will be supplied by British Polar Engines, Glasgow, and will be installed by the engineering department of the Burntisland firm.

TROY TOWN FLATS FOR OLD PEOPLE

THE Troy block of flats opened recently by Princess Margaret is in the South Eastern Gas Board's area and was erected for the Camberwell Housing Society, Ltd.

The scheme consists of 52 flats, 28 of which are two-roomed for elderly couples, and 24 single bed-sitting rooms; there is, also, a separate communal block containing a restaurant and lounge. Each flat is equipped with a kitchen and bathroom specially designed for old people. Gas is used for space heating, water heating and cooking, in both flats and communal centre.

The space heating is carried out by two Ideal No. G.B.A.5 boilers with automatic and thermostatic controls, and the heating circuit is also controlled by an air thermostat. Both boilers are interconnected for space heating and water heating service with a central hot water storage of 500 gal., and the plant is housed on the roof of the main block.

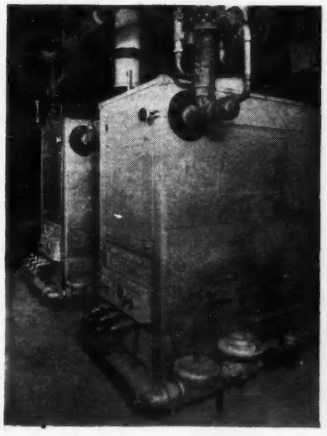
The space heating scheme aims at a maximum rise of 17°F., allowing for an average outside air temperature of 43°F. during the heating season, with a further 5°F. estimated due to solar radiation and other fortuitous sources of heat.

In addition to central heating there is also a small panel gas fire in each living room for 'topping up' when the outside air temperature falls below 43°F.

Front elevation of main block.

Undoubtedly two important factors which influenced the decision of the Camberwell Housing Society, Ltd., to choose gas for central heating were, first, because gas requires no storage space it was possible to install the boiler plant on the roof, with a considerable saving in capital costs and letting space; and, secondly, the automatic controls, which reduce labour costs.

The estimated potential gas consumption in therms per annum is: Central hot water, 6,650; central heating, 10,750; topping-up by panel gas fires (52), 780; cooking, 3,900; communal kitchen, restaurant and lounge, 1,300; total, 23,380. Average therms per tenant, per annum, 450.

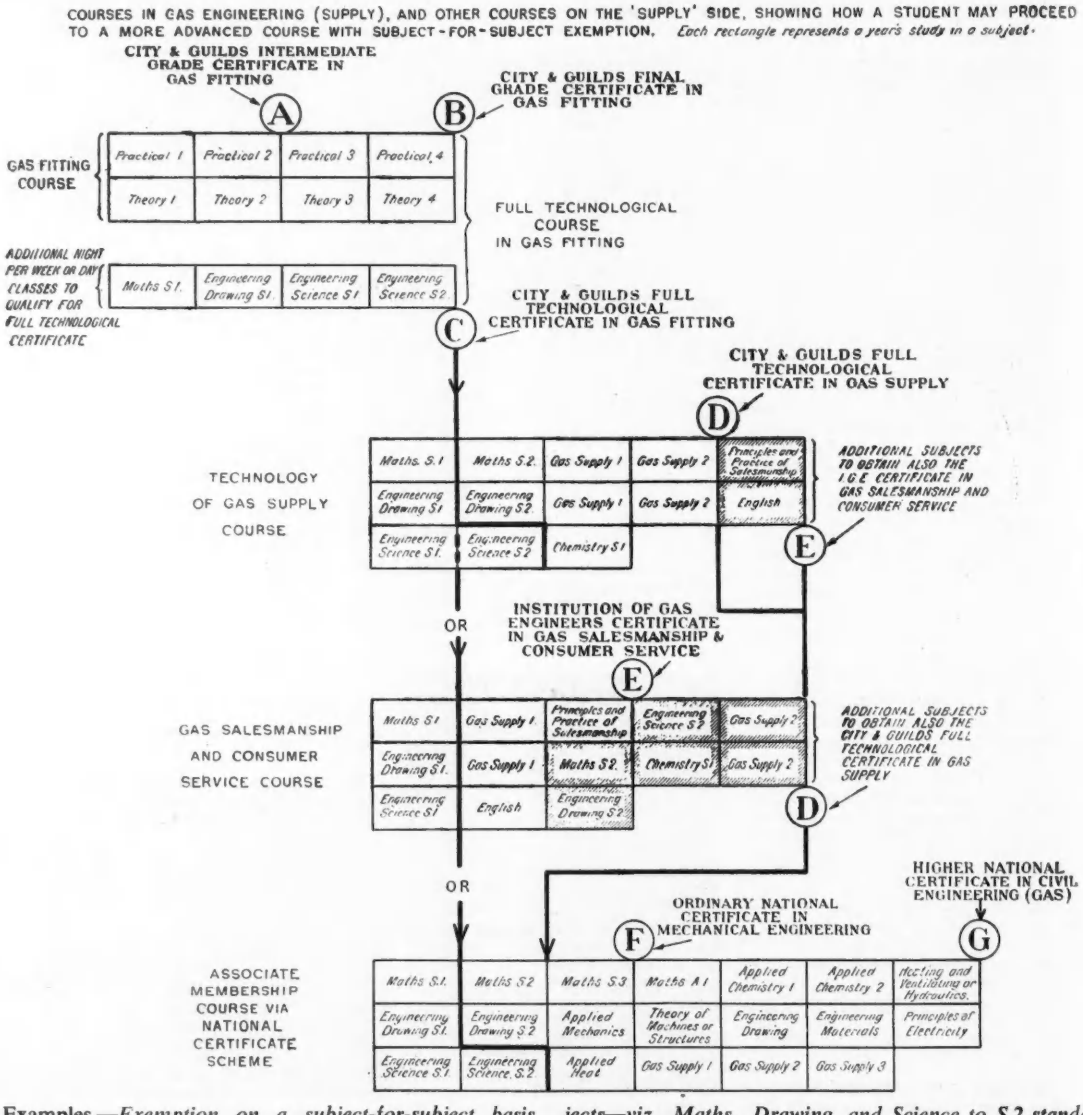


Left.—*The two central heating boilers.*

Below.—*Communal kitchen, showing Benham two-oven range, stockpot boiler, and Potterton hot water storage set.*

INSTITUTION EDUCATION SCHEME

At the research meeting of the Institution of Gas Engineers on November 25, during the discussion on the Report of the Gas Education Committee, Mr. R. N. Le Fevre, Training and Education Officer, North Thames Gas Board, presented the accompanying charts illustrating the inter-relation of the Education Scheme with the examinations and certificates of other professional organisations. The Gas Education Scheme, said Mr. Le Fevre, with its associated City and Guilds of London Institute courses was probably unique among industrial



Examples.—*Exemption on a subject-for-subject basis is granted only if the subjects form part of a course approved for Ordinary National Certificate in Mechanical Engineering. Gas fitters possessing a Full Technological Certificate in Gas Fitting may proceed to any of the three further courses and would be exempted from the four subjects already taken. Gas fitters who, in addition, have qualified in English—as many do, during their apprenticeship—would be exempted from English in the Gas Salesmanship and Consumer Service Course.*

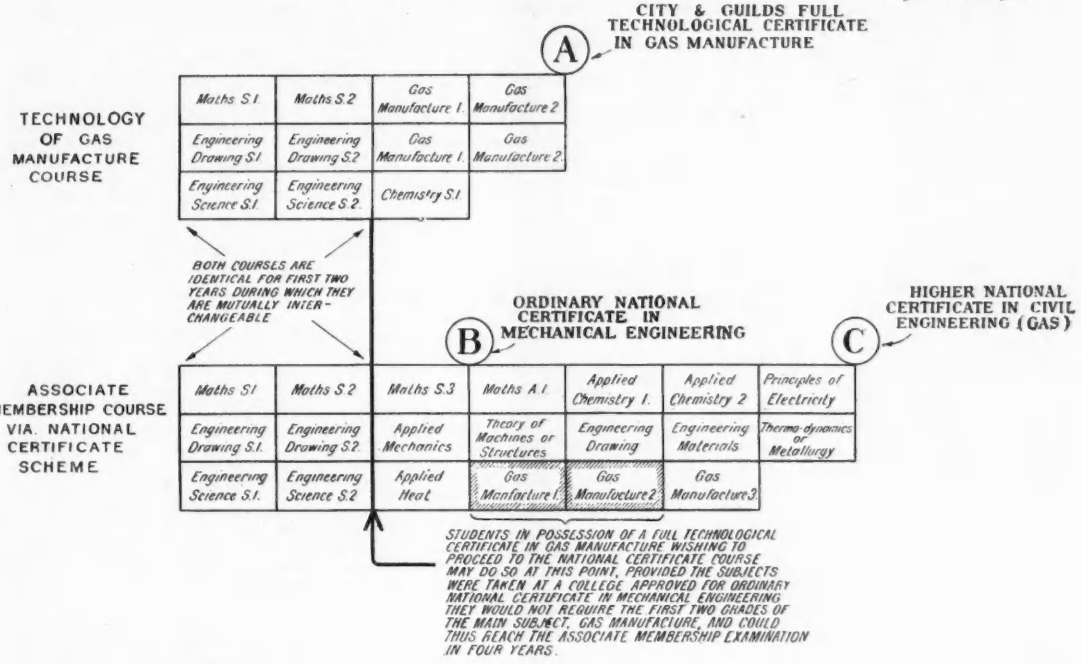
Holders of the Institution of Gas Engineers Certificate in Gas Salesmanship and Consumer Service may obtain the City and Guilds Full Technological Certificate in Gas Supply by qualifying only in the four remaining subjects—viz., Maths., Drawing, and Science to S.2 standard and Gas Supply, Part 2.

Those holding the City and Guilds Full Technological Certificate in Gas Supply may obtain also the Institution of Gas Engineers Certificate in Gas Salesmanship and Consumer Service merely by qualifying only in English and the Principles and Practice of Salesmanship.

Holders of the City and Guilds Full Technological Certificate in Gas Supply may proceed straight to the third year of the Associate Membership Course and obtain the Ordinary National Certificate in Mechanical Engineering in one year. Further, they would not be obliged to repeat the stages of the main subject, Gas Supply, they have already covered.

education schemes in that it catered for all types of employee from craftsman to professional engineers. However, the ramifications of the scheme were such that it was somewhat bewildering to those not fully acquainted with it. For example, it did not appear to be generally understood that all the courses, if taken under National Certificate approval, were inter-related and a student might progress, or transfer, from one to another at appropriate stages. To explain how this was done he had prepared these two charts. They had been vetted by Dr. P. C. L. Thorne, H.M.I., to whom Mr. Le Fevre expressed his gratitude for help and suggestions.

COURSES IN GAS ENGINEERING (MANUFACTURE) AND THE TECHNOLOGY OF GAS MANUFACTURE *Each rectangle represents a year's study in each subject.*


CITY & GUILDS FULL TECHNOLOGICAL CERTIFICATE IN GAS MANUFACTURE
A
TECHNOLOGY OF GAS MANUFACTURE COURSE
Maths S.1
Maths S.2
Gas Manufacture 1.
Gas Manufacture 2
Engineering Drawing S.1
Engineering Drawing S.2
Gas Manufacture 1.
Gas Manufacture 2.
Engineering Science S.1.
Engineering Science S.2.
Chemistry S.1.
BOTH COURSES ARE IDENTICAL FOR FIRST TWO YEARS DURING WHICH THEY ARE MUTUALLY INTER-CHANGEABLE
ORDINARY NATIONAL CERTIFICATE IN MECHANICAL ENGINEERING
B
HIGHER NATIONAL CERTIFICATE IN CIVIL ENGINEERING (GAS)
C
ASSOCIATE MEMBERSHIP COURSE VIA NATIONAL CERTIFICATE SCHEME
Maths S1
Maths S2
Maths S3
Maths A1
Applied Chemistry 1.
Applied Chemistry 2
Principles of Electricity
Engineering Drawing S.1.
Engineering Drawing S.2.
Applied Mechanics
Theory of Machines or Structures
Engineering Drawing
Engineering Materials
Thermo-dynamics or Metallurgy
Engineering Science S.1.
Engineering Science S.2
Applied Heat
Gas Manufacture 1.
Gas Manufacture 2
Gas Manufacture 3
STUDENTS IN POSSESSION OF A FULL TECHNOLOGICAL CERTIFICATE IN GAS MANUFACTURE WISHING TO PROCEED TO THE NATIONAL CERTIFICATE COURSE MAY DO SO AT THIS POINT, PROVIDED THE SUBJECTS WERE TAKEN AT A COLLEGE APPROVED FOR ORDINARY NATIONAL CERTIFICATE IN MECHANICAL ENGINEERING THEY WOULD NOT REQUIRE THE FIRST TWO GRADES OF THE MAIN SUBJECT, GAS MANUFACTURE, AND COULD THUS REACH THE ASSOCIATE MEMBERSHIP EXAMINATION IN FOUR YEARS.

Keith Blackman Peg Prices

FOLLOWING the recent wage award agreement between the engineering unions and the Employers' National Federation, and in the light of the anticipated increase in freight charges, etc., Keith Blackman, Ltd., announce that they have been studying the position as far as the effects on the company are concerned. They are alive to the fact that in view of the Government's request for extra effort in the export drive in face of increasing foreign competition, and in the interests of national economy, every effort should be made to halt the upward trend of manufacturing costs.

In spite of the fact that some suppliers of raw material, components, etc., have seen fit again to raise their prices, Keith Blackman have decided to attempt to absorb, at least for the present, the whole of the increased costs. Therefore, they announce that until further notice they will not be making any advance in prices for goods of their manufacture.

Belfast Corporation has decided to raise the price of gas for domestic use by 4½d. per 1,000 cu.ft., and to make comparable increases in prices for prepayment consumers. The increases are expected to yield about £95,000 per annum. Even at that rate, it is doubtful if the department will show a surplus.

SLIGHT UPTURN IN DEMAND

SIGNS of recovery from the recession in sales of gas which began in 1951 and was particularly marked in the second quarter of 1952 are reported by the North Western Gas Board in its *Quarterly Bulletin* covering the September quarter.

'It now seems likely,' says the Board, 'that the worst of the slackening in demand has passed. There is, however, no sign as yet of a resumption of the rate of increase in sales which up to the middle of 1951 had been characteristic of post-war years.'

During the year ended September 28, 1952, coal carbonised by the Board amounted to 4,243,000 tons, which was about 1.4% more than in the preceding 12 months, but only about one-third of the increase experienced during the last complete financial year, 1951-52.

The average weekly tonnage of coal carbonised by the Board in the September quarter was 0.3% less than in the corresponding quarter of 1951. This compared with a short-fall of 2.2% in the June quarter. During the month of September the tonnage of coal carbonised exceeded the tonnage for September, 1951, by 0.3%.

Gas available for sale—*i.e.*, made and purchased from outside sources—during the September quarter averaged 1,311 mill. cu.ft. per week. This, says the Board, represents an increase of 0.9% compared with the same quarter of 1951, and reflects a fairly sharp swing-back in demand since the June quarter, when gas available for sale was down by 2.9% compared with the same period in 1951. Almost the whole of the increase took place in September.

For the twelve months ended September 28 gas available amounted to 81,579 mill. cu.ft., representing a net increase of 0.3% on the previous year. This compares with an annual rise in gas sales of about 4½% during the post-war years.

An analysis of gas sales in the North West shows that the fall in consumption in the June quarter was most marked among domestic consumers. Domestic sales were 7.4% less than in the same quarter of 1951, industrial and commercial sales were 5% less, and total sales were 6.4% less.

For the year to August 24 the monthly average of carbonisation efficiencies throughout the Board's production stations was 73.52% compared with 71.60% in the corresponding period of 1950-51 and 71.69% in 1949-50. Thus the annual average efficiency of the Board's works has increased since vesting date by 2.55%, equivalent to a saving of 108,000 tons of coal at the current rate of consumption.

GAS BOARD POLICY ATTACKED

THE policy of the North Western Gas Board was attacked by Major W. O. Copland, of Warrington, when the North Western Gas Consultative Council, in Manchester on December 4, discussed the Board's annual report. Major Copland criticised aspects of the board's working as revealed in the accounts, including the fact that the number of employees had risen by 1,920, or about 10%.

He thought at the moment that the cost of operating 'this outfit' was something like 20% higher than it should be.

Mr. D. P. Welman, Chairman of the Board, replied to the criticisms in detail. He said they were not trying to build a 'bureaucratic paper organisation.' They had to build up one organisation from 103 separate ones. He did not claim that the Board was perfect and that nothing could be cut down, but pointed out that during the year every item had increased in cost.

The national ban on advertising by the industry had affected them far more than it was affecting any other industry, and was removing their capacity for competition. There were certain things which affected electricity and coal on which they could all co-operate, but they must maintain competition over a great field. They would remain 'fettered hand and foot' until they were rid of the ban on advertising and promotional services.

Referring to the increased number of employees, Mr. Welman said they had now taken over a number of accounting services which had previously been carried out for the Board by local authorities on an agency basis, and had also changed over, wherever it was sound to do so, from the use of contractors for such services as painting, mainlaying, and installation work, to their own labour. This meant an increase in their own labour figures, but there was no way in which they could offset this in the report by showing the non-employment of contractor's labour. It also represented a saving in cost.

They had set up an internal audit department employing about 20 people. He believed, and had already seen sufficient evidence, that these people could save much more than they were paid. Coke rationing, hire purchase, and increased technical staff had also proved necessary for efficient operations, though the present hire purchase laws were seriously affecting sales.

On the basis of the number of consumers to each employee, Mr. Welman said the national average, for all gas boards, was 86.5, and the North Western's Board's figure was 86. He did not think this proved anything because they would like to be more efficient than anyone else.

Danish Cooks at Doncaster

AFTER the termination of the recent International Kitchen, the Danish Delegates, Froken Agnete Lunstedt and Frü Tove Strate, were guests of the East Midlands Board and spent three days in the Sheffield and Rotherham Division. The Doncaster Branch of the Women's Gas Federation acted as principal hosts. audience comprising of the Mayoresses of Doncaster and Rotherham, members of the Worksop, Rotherham and Barnsley branches of the Women's Gas Federation, the Divisional General Manager, Mr. C. C. Wood, and Mrs. Wood, and other officials' wives and home service advisers of the Division.

This 'Yorkshire Evening News' photograph shows the demonstration in progress.

In order that an opportunity could be taken to see the Danish method of presenting food advice, a large cookery demonstration was staged at Doncaster. The Deputy Chairman of the East Midlands Consultative Council and the Deputy Mayor of Doncaster, Alderman Mrs. Rose Hodson, officiated over an

Prior to the demonstration, Froken Lunstedt and Frü Strate were officially welcomed on behalf of the Board by Mr. Wood and on behalf of the Borough of Doncaster by the Mayoress of Doncaster (Mrs. Hubbard).

During their stay the delegates visited several places of interest.

Appliance Price Margins

AT a meeting of the North Eastern Gas Consultative Council in Leeds on December 1, it was decided to appoint a deputation to meet members of the Wakefield City Council housing committee, to discuss the question of freedom of choice between electricity and gas in the new Kettlethorpe housing estate, Wakefield.

Alderman H. Hardy (Morley) said that the 2,000 houses on this estate would be all-electric and the large number of residents would not have the opportunity of having gas installed. He felt that there should be freedom of choice for such a large estate because it concerned some 8,000 people who would be living in it. 'We were told,' said Alderman Hardy, 'that the British Electricity Authority has given an undertaking that if all-electric appliances are fixed on this estate, the cost of installation of electricity would be less, and far below the actual cost. This is a very serious matter because about 60% of consumers prefer gas for cooking. The electricity authority has offered advantages which the rest of the community will be called upon to subsidise.'

Alderman Regan, J.P., Chairman of the Consultative Council, intimated that this was the first time they had met this matter of freedom of choice.

The question of appliance price margins was also dealt with at the meeting. Following the Council's rejection of the Board's recommendation at the last meeting, to increase the profit margin on appliances, Dr. R. S. Edwards, Chairman of the Board, made a further statement concerning this matter. Members of the Press were asked to leave the meeting, while Dr. Edwards made his statement to the Council.

In an interview with the Press later, Dr. Edwards said that the Council, after hearing a detailed report on the costs involved in this section of the Board's activities, and of figures of present returns, was now satisfied and agreed with the Board's recommendation to increase the profit margin on all gas appliances from 25% to 33⅓%. This increase would take effect from January 1.

We have been asked to add an amendment to the report in last week's *Journal* regarding the new Domestic Equipment Section which has been formed within the Rubery Owen & Co., Ltd., organisation. It is that town gas refrigerator sales (formerly 'Gasel' refrigerators) are under the sole management of Mr. Leopold Friedman, of Easiclene Porcelain-Enamel (1938), Ltd., Kent House, Market Place, Oxford Circus, W.1, and that all correspondence should be sent to him at that address.

The Price of Gas at Melrose is to be reduced from a maximum of 8s. 5d. to 6s. 8d. per 1,000 cu.ft., a saving of 1s. 9d. per 1,000, with further reductions on consumptions in excess of 10,000 cu.ft. per quarter. Prepayment consumers will benefit by reductions of 1s. 10d. per 1,000 cu.ft. for the first 10,000 cu.ft. per quarter and 3s. 2d. per 1,000 cu.ft. of gas used in excess of that quantity. The reduction has been made possible by the closing of the Melrose works and the link up with Galashiels.

Eastern Section—I.G.E.

Recollections of the Brussels Conference

Three members of the Eastern Section of the Institution of Gas Engineers—D. B. Parkinson, D. W. Ault, and W. A. Evetts—who attended the International Gas Union Conference in Brussels in June gave accounts of their visits to their fellow members at a meeting at the Institution headquarters on November 13, under the Chairmanship of Mr. F. A. Rhead (Peterborough).

MR. D. B. PARKINSON, in a general account of the conference, said it was no good pretending that those who went to Brussels did not enjoy themselves because they certainly did. Apart from the conference itself and the pleasant social functions, there was the novelty of being in a foreign city—for many their first visit—and meeting men of many nationalities engaged in the same profession. It gave members, too, an opportunity of exercising their linguistic prowess which was certainly tested to the limit in endeavouring to interpret the technical Papers in French, and to a lesser extent, in the daily search for restaurants in which one could obtain a meal within the capacity of the pockets of the British delegates.

The trend in the use of new gases and systems of production which up to the present has taken place more on the Continent and in the United States than in this country was apparent in many of the 28 reports and papers presented.

A General Survey

The transactions were divided into reports and papers. The reports were presented by four of the gas technical associations represented at the conference; the Institution of Gas Engineers gave two. The papers covered a wide range of subjects, including works plant, distribution problems, utilisation and the legal aspect. On the distribution side, the trend towards integration and the transmission of coke oven gas gave importance to papers from Switzerland and Holland. The first, entitled 'Some Problems of Long Distance Gas Transmission and the Use of High Pressure Gasholders,' discussed the technical and economic aspects of pumping and storage of gas in the light of the higher pressures now required. The second was entitled 'Some Considerations concerning Welded Joints and Internal and External Protection of High Pressure Gas Pipelines.' This paper, which was concerned principally with the mechanics of the welded joint, did not attempt to deal with corrosion at any length as in the French report, but it did contain an interesting description of an 'electronic inspector' for detecting flaws in the protective coating of steel pipes which operates on a similar principle to a mains finder and can indeed be used for that purpose.

The construction of large oil refineries in this country has, said Mr. Parkinson, increased the potential availability of propane and butane beyond the use of domestic bottled gas and has opened up the possibility of its employment as a substitute for coal gas in small undertakings—of which we have many in the area covered by this section—and for other purposes in gas production. In this connection the paper by M. Albrieux and M. Flurer on the 'Use of Propane in the French Gas Industry' was of particular interest. As Mr. Thompson (W. C. Holmes Continental representative) said in the discussion, 'in this important development the French gas industry is probably ahead of any other in Europe.' The authors referred to the fact that even before the war there were 11 small gas distribution systems in France operating on propane/air or pure propane—a fact not perhaps appreciated here. They described the French designed Mallet plant, for which W. C. Holmes and Company have the manufacturing rights in this country. This plant has positive operation by means of two synchronised exhausters, one for propane, one for air. A plant is already in operation in Wales and two are in process of being installed in the area of the Eastern Gas Board, but will operate on butane as propane is not yet available in sufficient quantity. With butane, however, it is necessary to provide some form of heat to assist vaporization in cold weather.

A description was also given of the American Cutler-Hammer plant which functions on the venturi principle, as does the Drake and Townsend Gasair plant, the other type of plant in use at the Whitland works of the Wales Gas Board. The two latter types are intended for use without gasholders, but it was pointed out that the absence of benzole fogging makes them more suitable for use on new distribution systems than on old. Gaz de France, however, are experimenting with suitable saturators for use with the Cutler-Hammer plant.

Although the use of natural gas in this country is unlikely, the paper on 'Problems in Changing from Manufactured to Natural Gas,' by Mr. Carl Wolf, the Managing Director of the American Gas Association, was of interest in view of the installation of butane/air and other plants, and would apply equally to butane/air, oil gas or methane. Mr. Wolf emphasised the need for educating the consumers by suitable publicity for the coming change over and in particular the desirability of furnishing the employees who are making the conversion with full information of the programme so that they can answer all questions.

The time given for presentation and discussion of the papers —30 to 40 minutes each—was very limited and still further restricted by the necessity for translating all the discussions. This had the effect of limiting the number of speakers on any subject to two or three, although, curiously enough, in certain cases where one would have expected it, there was no discussion at all. As at the meetings of the Institution of Gas Engineers here, however, there was always much unofficial discussion in the halls and corridors outside. There were also gas film shows to see and technical exhibits. All was conducted in an atmosphere of friendship and international goodwill.

WORKS VISITS

Mr. D. W. Ault, dealing mainly with works visits, said 13 visits were arranged, excluding the outings. There were five visits to coke ovens, seven to factories, and one to a fire damp cracking plant.

The most striking thing about the two factories he visited —Eternit and Contimeter—was the working conditions. Admittedly Contimeter would be classed as a light industry, but the majority of work rooms were considerably better than many modern English offices.

Contimeter make water heaters, some of which were being tested on butane, water, electricity, and gas meters. The normal hours of work are 48. The workers are not paid at an hourly rate, but on a modified Bedaux System—*i.e.*, on 'points' which take into account both the output of the worker and his possibilities, as well as his qualifications.

Apparently the employees do not readily accept overtime working, except in exceptional circumstances when authorisation has to be obtained from both the trade union and the Ministry of Works. This lack of enthusiasm for overtime working appears to be due to the fact that normally the Belgian workers run small holdings which during the summer occupy four to five hours per day of their time. This accounts for the fact that the Belgians are well fed.

At the Contimeter factory the visitors were most interested in one woman operative who had two assembly operations to carry out at opposite ends of a bench. She was provided with a high chair which had wheels running on a small rail track. A slight touch on the bench shot her up and down like a sewing machine shuttle.

Good Working Conditions

S. A. Eternit have two separate factories, one making asbestos sheets and moulded products made therefrom, and the other asbestos cement pipes. Here again the working conditions were magnificent. Few employees are allowed to come into contact with the asbestos which is, of course, the major industrial hazard. This is achieved by handling the asbestos in closed receptacles and conveyors once it has been removed from the barges into the conveyor boot. The only men who are exposed to the risk of asbestosis are those who unload from the barge,

empty the sacks and return the empty sacks. These men are given a full medical examination, including an X-ray once every year. The firm employs its own medical officer. All new employees are medically examined, and anybody in a bad state of health is not admitted. Mainly due to the precautions taken by the firm the factory is not classed as a dangerous industry. Masks were supplied, but were rarely worn.

Considerable interest was aroused in connection with asbestos cement pipes, and the tests in progress at the works were impressive. At first sight it would appear that asbestos cement pipes would be ideal in conditions which are aggressive to cast iron or steel, but on further consideration one realises that sulphate bearing soil water will just as readily attack cement. It does, however, appear that asbestos cement pipes are not entirely harmed by sulphate bearing soils unless the concentration is exceptionally heavy. This is attributed to the fact that on the initial attack the cement is eaten away, leaving asbestos fibres which are almost inert, with the result that asbestos cement pipes should be superior in life to cast iron.

In Belgium asbestos cement pipes are being used for gas in sizes from 2 in. to 10 in. diameter and this usage appears to be on the increase, judging by Eternit's deliveries to the gas industry which have shown a steady increase from 3,400 metres in 1947 to 126,000 metres in 1951. Last year's delivery to the gas industry of 1,400 tons represents 15-20% of their total output. It is interesting to note that the shift workers at Eternit are not permitted a meal break and work the full eight hours at their machine. Any food must be consumed while they are working. Day workers' hours are from 8 a.m. to 4.30 p.m., with half an hour break for lunch.

COMPLETE GASIFICATION

Mr. W. A. Evetts dealt mainly with the paper on 'Complete Gasification in the Chemical Industry and particularly in the Gas Industry,' presented to the conference by Professor Dott. Ing. Ivo Giordano, of Naples. Mr. Evetts said complete gasification had been studied by many workers in the gas industry, perhaps more particularly on the continent. Among the earliest workers was Professor Stracher, of Vienna, and Professor Giordano pointed out that present developments had been based upon Stracher's earlier work. The Stracher plant was not unlike the Tully Plant in use in this country.

At Naples the first plants were installed in 1927. The installation comprised three generators, each about 10 ft. in diameter, hand operated and each producing about 700,000 cu.ft. of gas per day at a calorific value of about 335-340 B.Th.U. In 1947, the construction of a second installation was commenced comprising two generators with one waste heat boiler. Provision has been made for the addition of a third generator and a second waste heat boiler. The plant is completely automatic, the valves being operated hydraulically, with self clinkering grate and automatic coal charging equipment. It was put to work in 1948 and the author claims that it has been working successfully for three years. Particular attention appears to be paid to the superheating of the steam which is produced at a pressure of 190 lb. per sq. in. and superheated to a temperature of 660°F. The capacity of the plant is stated to be approximately 3.4 mill. cu.ft. a day of 338 B.Th.U. gas. Each generator therefore has a capacity of 1.7 mill. cu.ft. a day.

A Rankin diagram relative to the installation at Naples showed that the efficiency of gas production only is 64%, or if tar and excess steam is included, 76.2%. The author stated that the system is suitable for rich and swelling lean coals and in fact can be adapted to any type of coal. When designing a plant, consideration is given to the type of coal to be used and it must be presumed that any individual plant is suitable for a definite range of coals rather than for the whole range.

Efficiency of Production

The efficiency of gas production is very similar to that which would be obtained from the two stage process—*i.e.*, carbonisation of the coal, followed by the production of water gas from the whole of the coke produced, except that in the latter case efficiency would be reduced to something under 70% if breeze is excluded from the balance sheet. When using similar coals, one would expect to obtain from the two stage process, 161 therms of gas of a calorific value of about 360 B.Th.U. together with the production of about 1.9 cwt. of breeze.

No information was given in the paper regarding capital, maintenance, or labour costs of the installation at Naples. It was interesting to compare the raw materials costs of gas produced by the complete gasification process described in the paper, water gas carburetted to give the same calorific value—*i.e.*, 338 B.Th.U. per cu.ft. and complete gasification by the two stage process. Taking the cost of coal at 90s. per ton and gas oil at 14d. per gal., the value of coke at 90s. per ton, breeze 45s. per ton, tar 6d. per gal. and surplus steam at 5s. per 1,000 lb., the net cost of raw materials in each case would be approximately as follows:—

	D/therm.
1. Gas integrale	5.1
2. Carburetted water gas, 338 B.Th.U. ...	6.42
3. Complete gasification in two stages ...	5.29

It could therefore reasonably be assumed when capital, maintenance and labour costs are included, complete gasification would produce a much lower cost per therm than the two stage process. A further comparison of interest is the net raw material cost of producing a gas of 500 B.Th.U. by (1) gas integrale carburetted to this value, and (2) carburetted water gas. Taking the same values for raw materials, the comparative costs are (raw materials only):—Gas Integrale, 7.34d. per therm, carburetted water gas, 8.32d. per therm.

High Cost of Oil Therm

The high cost of the 'oil therm' is brought out in this figure. Assuming the production of 1.2 therms of gas per gal. of oil with oil at 14d. per gal. and 15% of the volume of oil credited as tar, the raw material cost of a therm of oil gas is 10.9d. compared with 5.1d. for a therm of gas produced by complete gasification. This takes no account of the heat requirements of the cracking process. Even if some allowance is made for the low capital cost of plant required for the cracking process, the economic value of gas oil to the gas industry is probably no more than 8d. per gal. when compared with coal at 90s. per ton. At its present price it is obviously much over-valued as a raw material for gas-making.

During the year ended March 31, 1951, the gas industry used 143.5 mill. gal. of gas oil for gas-making. If the complete gasification process was substituted for carburetted water gas, the amount of oil used would have been reduced by about 40.5 mill. gal. At today's price of 14d. per gal. this is equivalent to £2,360,000. An additional 1,430,000 tons of coal would have been required in substitution for the 1,380,000 tons of coke and 40.5 mill. gal. of gas oil used in the water gas process, to give a gas of comparable calorific value. The substitution would have effected an overall saving of about 1d. per therm in the cost of raw materials, equivalent to about £1,500,000.

It would certainly seem that gasification integrale as described by Professor Giordano is a system well worth exploring in this country particularly for use as a diluent for coal gas. In Naples the gas produced from the process is being mixed with gas produced from an installation of continuous vertical retorts. The paper describes briefly the value of the plant for the production of hydrogen for the chemical industry and for the reforming of rich natural gases. It contains an interesting table setting out the economic aspects of gas integrale, water gas and producer gas in various combinations with coal gas and two useful graphs for determining the percentage of the various diluents required to produce gas of a given calorific value from the three different gases when used as diluents.

DISCUSSION

Mr. Bernard Clarke (Divisional General Manager, Lincolnshire), referring to Mr. Ault's communication, said they were interested in the application of asbestos pipes more seriously now that cast iron pipes were so scarce. He was surprised to hear that on the Continent they were using asbestos pipes up to so high a pressure as 12 p.s.i., which was higher than anything that was acceptable here. With regard to Mr. Evetts, it would be interesting to work out a balance as to how much oil would be saved by using coal, and he wondered where the coal was coming from to replace the oil. He had mentioned Tully plants. They were still using quite a number of Tully plants in the wilds of Lincolnshire, and in one small town they were sending out only Tully gas. It was not a desirable thing to do because it was a very low calorific value gas, but it was happening. Mr. Ault had spoken of the very

high standard of welfare maintained in a Belgian factory, and he foresaw the possibility of Mr. Ault coming forward shortly with ideas for providing stokers' messrooms on similar lines to those he had seen in the asbestos factory in Belgium.

There was a lack of welfare standards in some of our works. It was a matter which would have to be faced. The East Midlands Board was particularly keen about welfare facilities. It was one of the things that was going to contribute to securing labour for the industry.

Mr. C. A. Deas (Area Coke Officer, Eastern Gas Board) asked if Mr. Evetts could give any idea of the competitive selling price of gas on the Continent in relation to other fuels —oil, coke, and coal. He suggested that there was no future whatever for complete gasification plants using a highly caking coal. It was wrong to use coals which were going into short supply in this country for that purpose, and he would have thought that the future lay rather in the use of low-grade non-caking coals for complete gasification. Some research work in that direction was done a year or two ago, and that seemed to be the direction in which they should look, rather than any attempt to follow the Naples plant.

There was great need to replace the solid fuel requirements of water gas plants with something other than coke. He had always felt it was wrong to use first rate coke in an inefficient plant, and if they could replace it with coal in some way in a complete gasification plant using lower grade coals they would be getting somewhere.

Versatile Plant

Mr. Evetts said the plant he had described would deal with any type of coal—strongly caking, non-caking, and of all sizes, but it was difficult to believe that it would deal with dust. It was not claimed that one identical plant would deal with the whole range of coals. It was obvious that there would be fluctuations, but the same standard type of plant was capable of being adopted for any variety of coal, with particular attention to the question of whether the retort was tapered or not. If they had a particular range of coals they would make the taper to suit, or alternatively plant would be designed for certain ranges of coal. Their Continental colleagues laid great stress on low temperature carbonisation. Answering Mr. Clarke's question about coal, he suggested that in a few months' time they would be wondering where they were going to sell their coal. Coke was sold in Brussels at about £14 per ton last year, and English coke producers had been blamed for exporting coke below that figure.

Mr. E. O. Rose (Divisional Engineer, Tottenham) said that as a member of the party he went round the Brussels gasworks. It was quite an average and unexceptional works, consisting entirely of coke ovens, and he was interested in the economic set up. They treated their coke very kindly and were getting £14 a ton for it, but taking wages into consideration it was evident that the ratio of labour to material was very much lower, or rather the ratio of material to labour was very much higher. They sold their coke in 50 kilogramme bags (roughly equal to 1 cwt.); they were cheaper bags than ours and were sewn up. In this country we filled our coke into sacks with open tops and delivered it within a matter of hours but on the Continent they stored their sacks of coke under cover. It was all sent to merchants, and the sacks eventually came back, but not on the same day. The Continental system must cost a little more but he was sure the system evened out many of their difficulties in the way of storage, peak loads, and other things.

They bagged their coke at the rate of about five tons per hour against 15 to 20 tons per hour in normal practice in this country; that again reflected the low price of labour. They had not gone as far as we had in the direction of saving labour. On the whole he did not think their Continental friends had much to teach them.

Spraying Coal with Oil

Mr. G. E. Anderson (Newcastle), Charman of the North of England Section, said he also was in the party. All the coke ovens they visited were impressive and they were entirely mechanised and were equipped with complete instrumentation. At one works 2,000 tons of coal was being handled from transport vehicle to hopper in eight hours by three men under conditions of absolute cleanliness, and entirely without dust. A system of spraying coal with oil before charging which they saw at one of the works which they visited in Belgium had been employed at Newcastle during the last three winters with the specific object of augmenting the gas output from the ovens, and he could say from experience that the very substantially increased outputs had been of material benefit to them in their endeavours to cope with peak demands of up to 65 mill cu.ft. per day. Most of what they saw at Brussels fell into proper perspective if they referred back to the paper which M. Marcel Brabant presented to the meeting of the Institution of Gas Enginers in London in 1951. He recollected a significant statement in M. Brabant's paper to the effect that the production of gas in a relatively small number of super coke ovens might lead to the virtual elimination of gas engineering as a profession in Belgium.

Mr. E. Williams (Norwich) said he had never been to a conference so highly efficiently organised and he thought we could certainly take some lessons from our Continental friends. Tribute, nevertheless, should be paid to our own Institution for the liaison established with the Continental organisations in the interests of the comfort and entertainment of members. It was said that they could not have quantity and quality at the same time, but at the Brussels conference they enjoyed both. As the time for discussion was short it might be better on a future occasion to arrange for fewer papers so as to allow more time for discussion. So far as the present papers were concerned, Mr. Parkinson had raised an interesting point about transport. It was evident that more would have to be done about that if butane/air plants were going to succeed in this country. He believed that in the case of the Bungay installation the cost of transport was going to be about 20% to 30% of the cost of gas into holder.

Mr. F. T. Brookes (Divisional General Manager, Tottenham) proposed a vote of thanks to the authors on behalf of whom **Mr. Evetts** briefly responded.

AN ION ANEMOMETER

IN AN ARTICLE in the Year Book of the Heating and Ventilating Industry, recently published by Technitrade Journals, Ltd., Dr. Thomas Bedford, of the London School of Hygiene and Tropical Medicine, described a new anemometer for the measurement of low air speeds in free air. For this purpose, he comments, hot wire anemometers in one form or another have been used. All these heated instruments suffer from the disadvantage that, especially at very low velocities, they are much affected by the natural convection set up by their own temperature, even in otherwise quite still air. Furthermore, some of these instruments are affected by the direction of flow of the air stream, even when that movement is horizontal, so that in turbulent air they are liable to be untrustworthy.

To overcome these difficulties, Dr. J. E. Lovelock, aided by Dr. E. M. Wasilewska, has constructed an ion anemometer. The first of these instruments had a small sphere, 1 cm. in diameter, coated with polonium. The sphere is surrounded by two concentric wire cages of radii 3 and 4 cm. Each cage comprises three mutually perpendicular rings. The exterior cage is connected to earth directly, and the inner one is connected to earth via an electrometer. The central sphere is charged to a potential of 100 volts. The α particles emitted by the polonium coating ionise the air in the neighbourhood of the sphere, and the ions are collected by the inner cage. The number of ions collected is at a maximum when the air is calm, and as the air speed over the instrument is increased the number of ions collected, and consequently the ion-current measured by the electrometer, diminishes. The instrument is not heated, so that natural convection effects cause no trouble.

After the first instrument had been in use for some time, it was learnt that the use of polonium was liable to involve a hazard to health, and a fresh radio-active source had to be sought. In more recent instruments radium-gold foil has been used. The radio-activity of the source is so feeble that there appears to be no reason to fear harmful results from the very feeble β and γ radiations so long as certain simple precautions are taken.

The instrument has already given good practical results, but some further development work is in progress.

Dr. J. Burns

Effect of Load Variation on Costs

The following discussion took place at the Institution Research Meeting on November 25 on the joint paper by J. BURNS, G.M., Ph.D. (Chief Engineer), and L. J. CLARK, B.E.M., M.Sc.(Eng.) (Deputy Station Engineer, Beckton), North Thames Gas Board.

L. J. Clark

MR. H. F. H. JONES, M.B.E. (Deputy Chairman, Gas Council), said that the paper indicated that the gas industry need not be reluctant to accept the space heating load provided that it was kept within the limits of plant capacity and was charged for at a price which would cover costs. The gas industry offered a fuel and power service and so must recognise the demand from substantial sections of the community for completely labour-saving space heating—for example, from those who lived in flats and from families most or all of whose members were at work during normal working hours and would not tolerate the use of solid fuel, which in any case was not efficient for intermittent heating. They wanted a completely labour-saving service, and surely the gas industry ought to see what it could do about offering it to them at a cost which they could afford.

Would the authors agree that the studies made in the paper were primarily of interest and value to engineers planning works development and to commercial staffs in planning the building up of loads which they might attempt to obtain by a tariff policy or by sales promotion, but that, once a plant was installed in a works and the works was fully equipped, the running costs were what mattered to the engineer in charge, and he could forget about the capital costs and must run his works output according to the amount of gas that was needed and in the most economical way possible, having regard to the quality and composition of the gas which he supplied?

Making Best Use of Plant

One could regard the designers and planners of a gasworks as being in much the same position as the designers of a yacht, who designed the hull and provided suits of sails for all weather conditions, and the master of the vessel, whether he was racing or cruising or defying a storm, made the best use he could of the equipment at his disposal. Similarly, he suggested that the gas engineer responsible for running a gasworks must study day-to-day costs in such a way that he could make use of the plant at his disposal in the most economical way from time to time without regard to capital costs. Capital costs, however, had to be paid, whatever he did once the plant had been installed, and in this connection he might not have made sufficiently accurate calculations, but he tried to work backwards from the cost per therm to ascertain the exact basis upon which the capital charges had been calculated. He thought it would help if the authors would state the basis on which the capital charges had been calculated, giving the rates of interest and the lives of plants.

It was clear that the cost of supplying gas for use on the peak day in each year, and more especially on the peak day in the coldest year during any given period, was enormous when expressed in pence per therm, though not so large when regarded as a cash sum. The development of peak-load production plant of low first cost was therefore of very great importance, because for meeting extreme peaks running costs were of little importance in comparison with the capital spent on plant which might be held in reserve for several years before it was used. Credit was due to the staff of the North Thames Gas Board for the development of the oil gas plant.

It was agreed that there must be some degree of averaging in charging the consumer for peak-load gas, but the extent to which this should be allowed was a matter which merited very full discussion. One lesson to be learned from the paper was that gas could be sold reasonably cheaply for space heating if at the same time a demand for gas in the summer months was developed—for example, for water heating by gas complementary to water heating by solid fuel in the winter months.

The importance of balancing the various loads developed by area boards or created by public demand was well summarised in the paper: 'It would be very unfortunate for the industry if the production of peak-load gas were to prejudice the real value and the competitive possibilities of gas in the base-load market.' One might say that it would be disastrous, and no doubt the authors would agree that too much averaging of peak-load costs might have this effect. They had to consider how far it was fair to ask the consumer of gas for non-space-heating purposes to pay the cost of supplying peak-load gas for other people for a relatively short time during the year for peak-load use, and how far one should endeavour to make the people who use the gas under peak-load conditions pay a fair share of the cost.

In regard to gasholders, he thought it was generally accepted that it was ideal to restrict the amount of storage at the point of production to the minimum required to provide a cushion, and to construct the remaining gas storage as near as possible to the centre of gravity of the load, but it was, of course, emphasised in the paper that if they did disperse storage in that way means must be provided for transmitting the gas to whatever part of the district might require it in the event of breakdown or for other reasons. Some production engineers might say that a higher proportion of the total storage ought to be placed at the point of manufacture.

A figure of 5% was mentioned as being allowed for interest, depreciation, and maintenance. That might have been correct at the time when it was first worked out, but he would suggest that today one saw a gilt-edged security being issued at 4½%, a 60-year life for a gasholder gave 1.7% for depreciation, and one might call maintenance 1%. Those figures added up to nearly 7½%, which was more than 40% more than the 5% given in the paper.

Storing Week-end Gas

Again, reference was made to 4.6d. per therm as the cost of storing week-end surplus gas. Super-imposed upon the cost of making gas under the conditions studied in the paper, that appeared to be a very heavy charge, but it might be not unreasonable if at the week-end gas was being stored which would otherwise be blown to waste and not used at all. There were parts of the country in which that could happen, and 4.6d. per therm was not such a heavy cost if it enabled one to avoid the gas being blown to waste.

The conception of planning a board's production capacity so as to be able to give a full supply down to a stated atmospheric temperature was new to him. Area boards must, of course, decide down to what level they wished to make provision, but as more and more provision was made so one approached more and more a situation similar to that obtaining in the case of a fire brigade. There would be long periods with nothing for the plant to do, but there would be some short and exciting periods during which it would be very fully occupied. To meet this situation they needed plant that was reliable and could be brought quickly into operation. They did not have to worry too much about efficiencies in use, any more than the fire brigade was likely to worry too much about the efficiency of the fire pump, so long as it would do its job. He hoped they would soon arrive at the time when reductions of pressure would be matters of past history. It might add to the value of the paper if the authors could say what would be the extra cost per therm on all the gas supplied in a year if peak-load plant was provided to go to 21°F. only and it was used to 35°F.

(*Continued on p.* 629)

FOR GASMAKING

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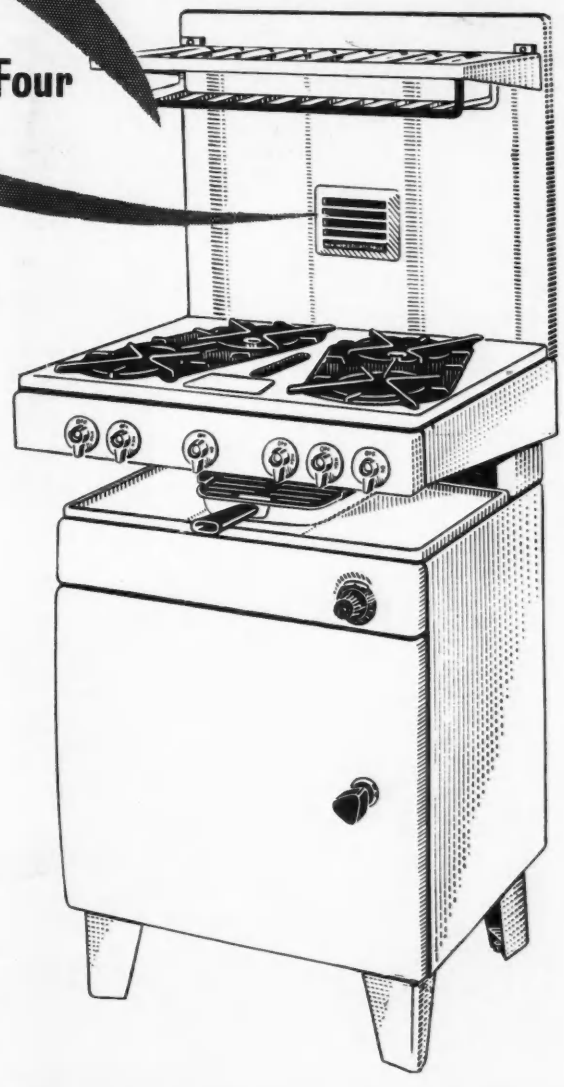

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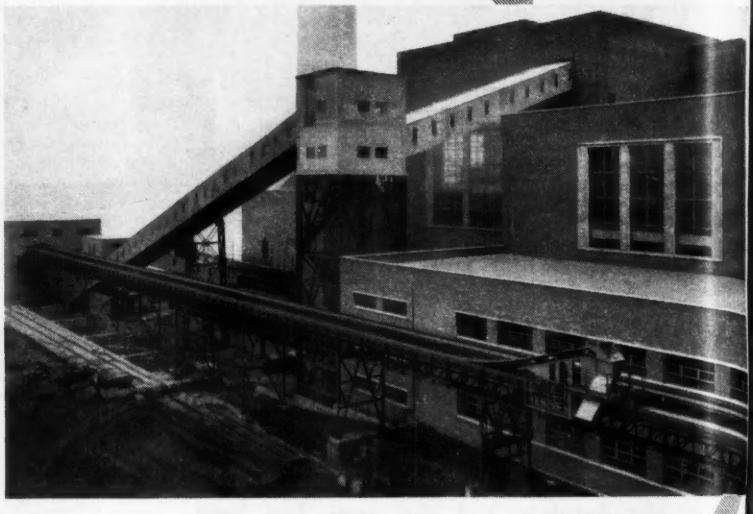

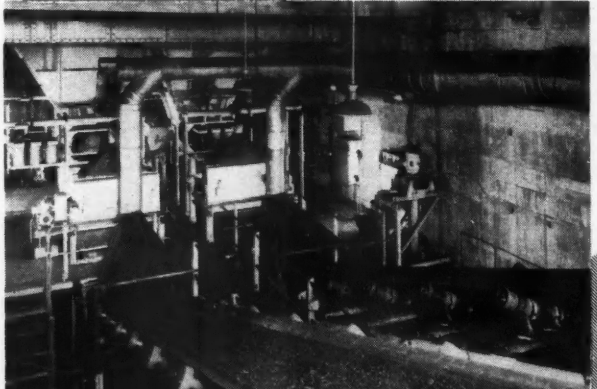

View of feeder pit showing magnetic separators, dust extraction plant, etc.

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He would be interested if the authors could show what the effect on cost would be of meeting part of the 'negative' peak in the summer by heating the coke oven installations at Beckton with rich gas.

He noticed that in the table setting out the cost of manufacture of coal gas, coke was credited at 81s. 10d., or 80s. 7d. per ton, depending on the type of plant, but when calculating the cost of making water gas the authors put the cost of coke at 73s. 6d. per ton. It might be true that the coke supplied to the water gas plant would, if not so consumed, have had to bear heavy transport charges and would therefore realise less than the average value of coke at the gasworks. This, however, could only be a marginal effect and would not obtain if the proportions of coal gas and carburetted water gas were greatly altered. The figures quoted might be based on actual experience, but could the authors give figures which should be used when considering, for example, a large increase in the production of carburetted water gas and a corresponding reduction in coal gas manufacture, and *vice versa*?

A Common Policy

Mr. W. K. Hutchison (Chairman, South Eastern Gas Board) remarked that, as a result of their fresh analysis of the problems which peak demands presented, the authors appeared to have come broadly to the view that sales development need not be regarded with such excessive caution as earlier studies had suggested, provided that the tariffs offered were not designed to promote the sale of peak-load gas. It had been one of the great merits of the structure of the gas industry that the functions of production and sales were both the responsibility of the same policy-making board, and, as a consequence, the interests of the two could be reconciled in a common policy for the benefit of consumers as a whole in each individual gas board area.

The present paper constituted a most instructive example of what was now called operational research, applied in this case to the relationship between demand and cost on the production side. He suggested that what they needed to complete the picture was a complementary study, on the commercial side, of the relationship between price and demand. For obvious reasons it would hardly be possible to carry out this analysis with the same degree of precision as the authors had used in their studies, but he suggested that the modern methods of machine accounting opened up new possibilities which they should explore. If research on these lines could be continued, there would evolve a combined policy designed to avoid the twin dangers of under-development, and its consequent undue load of overhead costs, and of over-development in directions where the new loads would endanger the service to which they were already committed.

It would no doubt have been a pleasant surprise to many readers of the paper to see the satisfactory conclusion given that if in the North Thames area the present embarrassing space heating load was doubled the overall cost of gas production would increase by only 0.45d. per therm, from 12.02d. to 12.47d. Even allowing for the further addition which the authors contemplated on distribution costs, it seemed likely that the extra cost per therm would be absorbed in reduction of such items as consumer service and certain overhead charges which were in the main related to the number of consumers rather than to the consumption of gas.

It should be noted further that the authors made the assumption that the new heating load was to have the very low load factor of 19% which their present heating load possessed. Experience suggested that for heating office blocks a load factor of 25% and for domestic heating 35% was attainable, and it would be to such loads that any future tariffs might well be directed. The advice to avoid tariffs which might promote the sale of peak-load gas should be examined most carefully. The first effect of making this gas too expensive was to drive the consumer to use it only at times when the icy wind compelled him to burn or to freeze.

For the four London divisions of the South Eastern Gas Board they were planning to have plant installed on a nominal capacity equivalent to 1.6 times the mean daily output, a figure which agreed closely with that calculated from the North Thames single-line chart. This factor was derived from a study of cold spells during 1929 and since, and it provided a guiding rule which contained some provision for such misfortunes as stored coal, difficult transport, and a rise in the sickness or other unavoidable absenteeism rate, which were apt to accompany severe weather.

Mr. Hutchison then commented on the calculations which the authors had made on the cost of gas of different types. The close approach of the cost of manufacture of coal gas to that of carburetted water gas on a good load factor gave the industry a new freedom to adjust its output of coke to meet the long-term market position. He hoped that the implication of this equality would not be interpreted as a justification for doing anything to hurt the present coke market. The revenue shown for coke in the cost of gas-making indicated that it would be most unwise to discourage the coke consumer. This equality between costs depended, of course, on the high capital cost of coal gas plant—so high, indeed, that, as the authors showed, there was little difference between the overall cost of gas produced in new plant and the average of that produced in existing plant. This meant that the economies resulting from new plant had been swallowed up in the capital costs. The lesson to be learned was that they must make a determined effort to prune all exuberance in plant design until bare essentials alone remained and to ensure that every gadget could justify its existence by hard cost standards.

Mr. T. Campbell Finlayson (Chairman, Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd.) remarked that the paper was an exercise on one particular aspect of gas manufacture practice which Dr. Burns dealt with in a communication to the Institution in 1951. In 1951, Dr. Burns showed that it was not economic to install coal gas plant to deal with increments of load for some 130 days or less, because carburetted water gas could do the job more economically. Today, in the present paper, the authors showed that the increases in coal price and capital charges of carbonising plant made it uneconomic to install coal gas plant for increments of load occurring on less than 250 days per annum and suggested that further increases in coal prices would tend to sway costs in favour of carburetted water gas, with far-reaching and unsettling effects on the gas industry's operating economy. Mr. Finlayson proposed to confine his remarks to an examination of this startling statement, which, coming from Dr. Burns with his unique accumulation of operating data, would undoubtedly be widely quoted and used in the future. In the first place, he found some difficulty in reconciling the figures relating to capital costs with those in his possession. In his 1951 paper Dr. Burns gave a table for the costs of carbonising plant and ancillary plant per mill. cu.ft. of gas per day as at March, 1950. In the present paper the authors showed the same table corrected to September, 1952, prices. From this it appeared that all forms of carbonising plant, ancillary plant, gasholders, and so on had increased in capital cost by about 40%. Fortunately the capital cost of carburetted water gas plant had increased by only 7½%. Regrettable though the rise in capital costs had been between March, 1950, and September, 1952, he could assure Dr. Burns that they had not increased by 40% for the types of plant he mentioned, and he would further ask Dr. Burns whether the figure he now gave for a C.W.G. plant represented the current price of the complete plant capable of working 365 days per annum at 19% load factor.

Capital Costs

He had looked very carefully into the question of the current capital costs of continuous vertical retorts and intermittent vertical chambers based on plants of 5 to 7.5 mill. cu.ft. of gas per day, and he could assure the authors that the capital cost they gave was about 20% high for a plant built to meet normal requirements in this country today. As the capital charges per therm of gas of coal carbonising plants were stated to be twice as great as those for C.W.G. plants—all plants working on base load—he thought it was desirable that they should have the correct basis.

Secondly, he would like to ask why the authors suggested that increasing coal prices would tend to sway the balance in favour of C.W.G. Was there no possibility of an increase in the price of gas oil or an improvement in the coke/coal price ratio? He would suggest a little more caution in this assertion.

Thirdly, he would like to mention a point which seemed to him to be of basic importance in considering the comparison between these two methods of producing base-load gas. When considering the lower capital cost of a C.W.G. plant in comparison with any form of carbonising plant, to make base-load gas, it must be remembered that the water gas plant had the advantage of starting its process of gas manufacture by using a residue from a carbonising plant and did not carry its pro-

portion of cost in tar, ammonia, and sulphur removal from the original coal. Dr. Burns should work the C.W.G. plants on coal and see whether it put up the capital cost of the gasification and by-product treatment units.

These were all matters of detail. Discussing economic considerations in relation to load, the authors stated that it was obviously still correct at the present level of prices to install coal gas plant to meet the base load 'if only to supply coke for the carburetted water gas process and to preserve some independence of imported oil.'

When one examined the rest of the paper and saw the very high cost of producing peak-load gas for space heating and so on, one would imagine that the first and major justification for the production of coke was to store it in the cellars of the consumers and avoid some of the expensive peak-load gas. When he read the paper he began to wonder whether the authors really believed in a two-fuel policy to meet the economic and technical problems of the gas industry or whether, by their search into ways and means of meeting an all-gas load, they were seeking to acquire the problems of the electricity supply industry—leaving, in the meanwhile, the National Coal Board to fill the cellars with solid smokeless fuel. He would seriously suggest to the authors that before they classed coke mainly as the raw material for carburetted water gas production they should carefully review their position in connection with a two-fuel policy for the gas industry. It was the correct decision on this basic problem which would determine the future economy of the gas industry.

Half-Way House

Dr. G. E. Foxwell asked what should be the extent of the load. Surely it must be the whole of the load if they took any space-heating load at all. There was, of course, a half-way house, and that was to take a background heating load only, which might be defined as down to 35°F. or perhaps 40°F. They might get a very different picture there, because there were different appliances for background load. He suggested that one of the points which they should consider was the designing of an appliance which would burn both gas and coke, as required, simultaneously. The late Mr. George Helps showed a fire of that kind, designed by himself, at the British Industries Fair in Birmingham about 1937 or 1938, and it was technically correct.

From the Egerton report, the average amount of space heating required over the year, 250 days, was about 200 useful therms; in other words, 200 therms actually put into the room. If they took the efficiencies of appliances from the Ridley report, they found that gas fires had a room heating efficiency of 50%. Hence 400 therms was needed, which at 1s. 4d. per therm, costs £26.65 a year. Similar calculations could be made for various appliances and various fuels. In the case of the flueless gas heater, the total cost was £14.65 a year. For the open coal fire, which had an efficiency of 20%, the total cost was £14.6. For the openable coal stove the cost was £7.3, for the openable coke stove £5.85, and for the closed coke stove £4.4. They could only compete for the 90% of the population to whom £10 a year meant something if they used a flueless heater in the background, and he suggested that the gas industry should seriously consider the more general use of flueless heaters for background heating.

Mr. H. L. G. Boot (Chief Chemist, Southern Gas Board, Bournemouth Group) explained that experience in Bournemouth of the statistical methods to which the authors referred had shown that they provided a most satisfactory way of preparing a production and plant availability plan one year ahead, and such a plan was used in the budgetary control system at Bournemouth. Of course, it was necessary to assess the trend of the next year's increases or decreases in sales and lately this had not been easy, because of rising costs. They had, incidentally, observed that over the past five years a significant relationship had existed between expenditure on gas by domestic consumers, the total personal expenditure per head of population, and the temperature units which were in Communication No. 352.

The authors included such fixed charges as rates and welfare in the total production costs, while separating capital charges; furthermore, the capital charge per therm was adjusted for the load factor of the plant, but the rest of the cost per therm was left alone, and he was wondering if this procedure was strictly correct. For example, if the carburetted water gas plant referred to in Appendix 3 was working at a load factor of 50%, the capital charges would be 2.2d. per therm, but it did not follow that the total cost was 10.96d. + 2.2d., since the fixed component of the 10.96d. should also be adjusted by the load factor. A knowledge of marginal costs per therm would be useful in this connection, and it was probable that regression analyses of recent costs in a similar plant would provide reasonable estimates of the marginal costs as well as of the works' fixed costs that were additional to the normal overheads.

Regression analysis of production costs could be applied to any production unit so long as the costs and outputs of that unit were known. The equation would probably take the form of $y = mx + c$, where y was the total cost of running the unit in a certain period of time, m the marginal cost, and x the thermal output in the same period of time. The constant c gave the total fixed costs and, after deducting the known overheads, they arrived at the fixed costs of the unit. Mathematical tests could be applied to ascertain whether the constants m and c were reasonably good estimates of the marginal and fixed costs respectively. In the case of coal gas and carburetted water gas production, it would probably be useful to obtain a multiple regression equation of the type $y = a + b_1x_1 + b_2x_2$, where y was the total cost, b_1 and b_2 were the marginal costs of coal gas and carburetted water gas respectively, and x_1 and x_2 the respective thermal outputs and together made the total production. By this means it would be possible to obtain reasonable estimates of fixed and variable charges at different load factors and thence the costs of base and seasonal load gas.

He noticed that the carburetted water gas costs were worked out for a calorific value of 500 B.Th.U. per cu.ft. and that they were based on the component costs of a therm of blue water gas and of a therm of oil gas. He was not certain that this was the best procedure for, although it might be perfectly correct to state that 40.2 lb. of coke corresponded to 1,000 cu.ft. of blue water gas, it could not be assumed that no additional quantity of coke was required to supply the heat absorbed during the decomposition of the oil.

Oil and Coke Relationship

If certain assumptions were made, it was possible to obtain relationships between gallons of oil and pounds of coke per 1,000 cu.ft. of carburetted water gas. For example, if it was accepted that 1.9 gal. of oil per 1,000 cu.ft. of carburetted water gas corresponded to a calorific value of 475 B.Th.U. per cu.ft. and that, for every B.Th.U. change from 475 there was an alteration of 0.01 gal. of oil per 1,000 cu.ft., then the following equation held: $g = 0.01\,H - 2.85$, where g = gal. of oil per 1,000 cu.ft. and H = calorific value of the carburetted water gas. It was also possible to obtain a more complex theoretical equation relating gallons of oil per 1,000 cu.ft. of carburetted water gas with calorific value, enrichment therms per gallon, and percentage inerts in the gas. He was, however, of the opinion that a more rational approach was to make a regression analysis of the actual results, and it was of interest to note that, by so doing at Bournemouth with calorific values of carburetted water gas varying from 420 to 520 B.Th.U. per cu.ft., they obtained the following relationship: $g = 0.0099\,H - 1.706e - 0.651$ where e = enrichment therms per gal. of oil. With e equal to 1.26 (average figure), the equation became $g = 0.0099\,H - 2.80$ and it was then, of course, possible to estimate the cost of oil for any calorific value within their normal range.

The estimation from first principles of the quantity of coke per 1,000 cu.ft. of carburetted water gas at different levels of calorific value was not so straightforward, but, by assuming a figure at a certain calorific value and allowing for the inerts in the gas, an equation could be obtained of the type $K = 41.45 - 0.0224\,H$ where K = lb. of coke per 1,000 cu.ft. of carburetted water gas and H = calorific value. Again, a regression analysis of recent results was probably preferable, and in their case, over the same range of calorific value and making corrections for percentage carbon and coke size, the following equation was obtained: $K = 38.94 - 0.017\,H$.

The application of regression and correlation methods to the analysis of works operations and costs revealed information that could not be obtained by normal accountancy procedure; and he suggested that these methods could be of use in any study of the economic problems facing the gas industry.

Mr. S. K. Hawthorn (Divisional Engineer, Birmingham) suggested that they should ask themselves what was meant by plant capacity, and the answer must be that it was the maximum productive capacity that they could get out of the plant, day in and day out, over a long period. Nevertheless, there

(*Concluded on p. 635*)

Are you playing with fire?

Introducing an unsafe heater into an area containing inflammable gases is a pastime that can have the most elevating results . . . but for people who prefer to keep their feet on the ground De La Rue have evolved a much safer method of keeping warm. Operating on the same principle as a miner's safety lamp, the *De La Rue* Safety Model Space Heater can be used without risk in garages or storage spaces where petrol or other inflammable fumes are present. The Safety Model is fitted, operated and maintained in exactly the same manner as the already famous standard model of the *De La Rue* Space Heater. Full details will gladly be sent on request.

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MAIN

The 20 CENTURY

The Century Cooker is designed to ensure better cooking, in less time, with less effort and less gas

The hotplate has four burners, each capable of boiling a three-pint kettle in about six minute yet each can provide the gentlest simmering heat required. The large-size griller heats up rapidl and the grill pan has a reversible two-height grid with cross wires to support small pieces of foo such as kidney or tomato. All taps are safety push-in type—the oven tap having a distincti red marking. The large oven is very efficient. Its products of combustion are vented from a outlet in front of the backplate, thus permitting the cooker to be fitted flush to the wa without risk of staining it. Short embossed runners on the side linings and large radii at a joints and corners simplify cleaning. Access to the space below the oven, for cleanin and for storing the cake and meat tins, is obtained by lifting off the plinth doo

—And it is easily serviced, too!

A roomy oven, easily cleaned

The full-width "drop" door, when open, provides a handy platform for dishes and allows light to enter the oven from either side.

The Century has many features which lessen maintenance an renewal costs: Simplified construction, easy accessibility, maximu interchangeability and minimum of parts.

No chassis is used in its construction. Great strength with minimu weight have been achieved by the use of large sheet steel panels wit deep flanges, bolted together.

HOTPLATE.—The cast iron pan supports are interchangeable rig to left and back to front. The burners, cast in tandem pairs, f right or left. The burner support is reversible. Injectors ar recessed behind the tap shield. A pressure-testing point i provided on the gas rail.

OVEN.—The side casing can be removed without disturbing th lighter connection. The burner, positioned at the back, i attached to a shield and is thus easily taken out and replaced The thermostat rod is housed in the flue. Levelling screw are provided at the four corners of the base.

The one-piece double platerack lifts off

It can accommodate 16 plates standing on edge (2 in each slot) or 4 large plates of food when dishing up.

CREAM
Vitreous Enamel finish

Hotplate Extensions
can be supplied, if required

The oven gas is lit from the front

by means of a flash ignition tube from the lighting hole to the burner.

R. & A. MAIN LIMITED, LONDON AND FALKIRK

Thermal Efficiency

The following discussion took place on the paper on 'Thermal Efficiency in Gas Production and Utilisation' by J. E. DAVIS, M.Inst.Gas E., F.R.I.C., Chief Technical Officer, South Eastern Gas Board, at the autumn research meeting of the Institution of Gas Engineers on November 26.

J. E. Davis

DR. R. H. GRIFFITH (Director, London Research Station, Gas Council) agreed with Mr. Davis's method of calculation of gas production efficiency, but he thought that the value of that efficiency would vary considerably from plant to plant and from works to works, depending on the type of plant and its condition. They must be very careful not to regard the figures which Mr. Davis had mentioned as a sort of limit to which the industry might attain. There were many plants in different parts of the country for which the gas production efficiency was appreciably higher, and there was no reason why they should not increase it still more.

Mr. Davis had touched on the subject of coke ovens used in the metallurgical industries, and he (the speaker) thought it might be worth while to consider what happened in the other branches of the carbonising industries. He referred particularly to the carbonisation of oil shale for the manufacture of oil and the manufacture of coke in beehive ovens. The beehive oven had come into its own again in America and was giving a very good return to those who operated it. In the beehive oven there was only one product, and in the oil shale carbonising industry the solid residue had no thermal value. So in both these instances all the thermal losses had to be borne by a single upgraded product, and there the calculations were perfectly simple.

But it was in the coke oven used for metallurgical purposes that they came to conditions much closer to their own. A good deal of the gas which was produced might be used in heating the ovens, and the disposal of tar and other by-products was not a matter of major concern in the production of coke. He thought it would be very helpful if a representative of the coke oven industry were willing to make a contribution and let them hear what his industry thought on this subject.

A Ratio of Two Quantities

Dr. F. J. Dent (Director of Research, Birmingham Research Station, Gas Council) said that at first sight the expression for the 'Percentage Thermal Recovery' had greater significance than that for the 'Efficiency of Gas Production.' It was a direct ratio of two quantities both of which could be measured and, in comparison, the attribution of all heat losses to the gas as in the 'Efficiency of Gas Production' appeared conventional. In fact, it was conventional.

But the 'Percentage Thermal Recovery' was solely concerned with the sum of the potential heat of all the products and there was nothing in its definition which allowed it to be bracketed with the thermal efficiency of using any one product to arrive at an overall coal efficiency. If it was used in such a way, there was just as much convention in assuming a proportional distribution of heat losses as in debiting them all to gas as in the 'Efficiency of Gas Production.'

The fact was that for a process such as carbonisation, with several products, there was no method based on thermal considerations alone which enabled the deduction of the production efficiency of any one of them. He was therefore, continued Dr. Dent, completely in agreement with Mr. Davis in his statement that neither of the two methods had an exclusive claim to be correct or scientific. Both were conventional, and it was a question as to which was the more reasonable. There was little doubt that the 'Efficiency of Gas Production,' with the losses debited against the gas, was the better for most circumstances.

As stated in the Memorandum from the Institution, it was in line with the cost aspect, but even for purely thermal considerations it was far more convenient. If the 'Percentage Thermal Recovery' were taken as a gas production efficiency, then its use should always be qualified by some statement to the effect that, in producing the gas, additional losses were incurred in producing coke and tar which might or might not have been offset by greater utilisation efficiency. It was much simpler, as Mr. Davis pointed out, first to debit the losses against the gas and then to take credit for the enhanced efficiency from coke in domestic appliances.

The element of convention did, however, cause one to reflect on whether there could be an expression of efficiency which was free from it. So long as their process was carbonisation with a major by-product, such as coke, he did not think there was, but it could be realised that the difficulty would not have arisen if the industry had, in the first place, been built up on a process of complete gasification. He did not think it would have arisen if carbonisation had been introduced subsequently to satisfy a demand for coke, since any resulting change in overall efficiency would automatically have been regarded as due to the coke.

In other words, and on thermal considerations alone, one could arrive at separate efficiencies for two products from the same process if one operated a second process producing only one of them. With figures so obtained, there would be the concept that the development of complete gasification towards higher efficiency would have the reflex effect of lowering the efficiency of coke production in keeping with the fact that coal conservation would then be achieved by a greater use of gas and a reduced use of coke.

They could consider such a method if complete gasification became established as one of their principal processes, but plainly it would be meaningless to do so at the present time.

What Convention?

Mr. G. C. Holliday (Manager, Watson House, North Thames Gas Board) remarked that what he was concerned with was that someone would tell them decisively what convention he must use when calculating coal requirements. The amount of coal carbonised by the gas industry was primarily determined by the demand for gas and not for coke. To increase the therms of gas per ton of coal carbonised was still the main objective, and not the increase of coke or by-products.

If the engineer produced only 50 instead of 75 therms of gas per ton and 25 of the potential gas therms were left in the coke and tar, he could still claim much the same efficiency by method A as before, but his Board would not be very pleased about it.

Method A was a useful overall heat balance check of the carbonising process, but it was the gas production efficiency (method B) which the engineer was always striving to improve. In his opinion, it was the correct method to use as a basis for comparing the utilisation efficiency of gas with that of other fuels and their equivalent raw coal requirements.

Coke was being used and regarded by the domestic consumer as an alternative to coal. If it was to share the thermal loss of the process (method A), it started off as a fuel with the disadvantage of having a coal equivalent some 30% more than that of raw coal. The increased efficiency of utilisation for domestic purposes as compared with raw coal—as even the Ridley Committee agreed—would not offset this initial handicap.

Incidentally, coke had been shown to have a higher utilisation efficiency for certain non-domestic purposes also. The

impression might have been gained that it was only on the domestic side that coke was more efficient than coal, and he took the opportunity of correcting this. Nevertheless, overall, if they used method A, it might well be said that from the point of view of its coal requirements, the use of coke instead of coal was wasting the nation's fuel. This was a matter of some considerable importance, therefore, if the industry really intended to extend substantially the use of coke for domestic purposes.

He felt sure that the author, in giving the examples of the two methods, did not intend them to assume that the figures of 81% and 56.5% represented the exact state of affairs, and he thought it would be true to say that the actual figures were nearer 75% and 50% respectively.

If they applied the figures to domestic consumptions, in a house where the coke consumption was about 2 tons, method B would give a coal requirement less than method A where the gas consumption was up to 300 therms. Above 300 therms, method A would give lower consumptions. Now, 300 therms was a pretty good gas annual consumption with the majority of consumers, so that, applying method B at the moment to any actual results that might be obtained in houses, it would show a lower coal requirement than method A, in general.

Applying method A or B to the results in the Abbots Langley houses, in general the gas-coke combinations had the lowest coal requirement. Where direct comparisons between electricity and gas had been possible, electricity used 1.6 to 2 times the amount of coal as gas, according to the method chosen.

Mr. L. T. Minchin said that his technical and scientific feeling rebelled against a system of efficiency determination which depended on the name that was painted on the factory door—*i.e.*, gas or coke. In the particular example quoted by Mr. Davis, the efficiency of coke production was 75%. If they regarded it as a coke undertaking, then it was 75% coke production and 100% gas production. If they regarded it as a gas undertaking, it is 56.8% gas production and 100% coke. In both cases, that seems to him to be rather silly. He could not see why the gas industry, in an excess of self-abnegation, should decide that its thermal efficiency was only 56%, while it was very quiet about its miraculous performance in producing coke at 100%. Moreover, he thought this was misleading, because it led to the assumption, which was false, that in the production of water gas—which should, to his way of thinking, be taken on an 80% basis of coke production and not 100% there is a rather inefficient process; and it also affected the tables of domestic installations which are given in the paper. In general, he thought that method A should be adopted.

Dr. A. Parker (Director, Fuel Research Board) said they must not get lost in science and mathematics. If they adopted the same sort of procedure as method B for the coke oven industry, then they produced the coke with 71% efficiency and the gas with 100%. Now, in these days quite a lot of gas was bought by the gas industry. It seemed, therefore, that if they were going on with the calculation, the gas industry would be much more efficient by buying the whole of its gas from the coke oven industry!

He would like to have an answer to that question, because if they were not careful when they calculated these efficiencies they would do nothing but fog themselves.

Dr. G. E. Foxwell (President, Institute of Fuel) suggested that what they were doing in this country was carbonising coal. Every product they produced from that coal should bear the loss that they inevitably made in doing so. They carbonised coal not to increase the thermal efficiency necessarily; they carbonised it to get gas and coke and tar and benzole, which they wanted for specific purposes. Each of those should bear its particular proportion of the cost.

They were doing almost a national dis-service by suggesting that any one of those products must bear the whole of the cost.

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*EFFECT OF LOAD VARIATION—**Continued from p. 630.*

was often some overload margin in plant capacity which could be called on for short periods, and the authors had indicated quite clearly that cold spells were of relatively short duration. As an example, the scurfing programme of carbonising plants could be suspended for, say, two days in an emergency. This was not a desirable thing to do, but he thought that every gas engineer would resort to it rather than see the district pressures reduced. There were, however, certain combinations of plant which lent themselves more readily than others to operating under overload conditions, and by and large it was easier to obtain excess thermal output at the lower declared calorific values.

In dealing with peak loads, they should endeavour to meet them without installing special plant. As the authors pointed out, plants installed solely for very occasional use had to be maintained, and it was very difficult to find men to operate them just when they were wanted. It was surely better to devise a plant which could carry a substantial overload for a short time, without spending capital on separate plant, which could only operate at a very low load factor indeed.

They had had this question of meeting peak loads very much in mind in designing the new Swan Village works in Birmingham, and they had decided on the following arrangement. The continuous vertical retort plant would operate at as high a calorific value as they could obtain with the coal available, which would be in the region of 500. This would be reduced to the declared value of 450 by the regular addition of externally produced blue water gas. The retorts would be heated with hot producer gas from five mechanical producers gasifying No. 4 coke, which, incidentally, was the least saleable grade. Only four producers would normally operate, with the fifth as a standby. This was a proper policy, regardless of any peak load conditions, but, when extra gas was called for during very cold weather, producer gas would be admitted into the foul mains by bringing the standby producer into operation, or, if it was not available, by changing over to No. 3 coke under four working producers.

The fall in calorific value would then be made good by carburetting the water gas. In effect, peak gas would be provided as carburetted producer gas. With this arrangement a 10% overload was provided for without additional capital cost (except possibly for the carburettor of the water gas plant) and without any extra labour. In addition, still more gas could be made for a day or two by suspending scurfing operations, giving an overall maximum increase of 18%. It was not, in his opinion, profitable to make use of carburetted producer gas for normal working, but for occasional peak loads it was far preferable to the addition of carburetted inert gas, which was the proper term for the euphemistic 'oil gas,' which called for additional capital and labour. He did not want to enter into the argument as to whether coal gas or water gas was the cheaper to produce, but he did suggest that by combining them they could make a cheaper gas than either.

It was noted from the paper that the increase in output as the atmospheric temperature fell from 30°F. to 21°F. represented a 20% increase of the space heating load, or, if adjusted to the whole load, it amounted to 11% of the whole load in the area of the North Thames Gas Board. Increases in gas outputs in Birmingham during the cold winters cited in the paper were of very much the same order.

He agreed with the authors that provision of excessive storage could not be justified, and Birmingham was working with a holder storage of a little under 50% of the maximum day's output, which compared almost exactly with gasholder storage in the North Thames area. With a weekly load which was fairly constant from Monday to Friday and considerably lower at the week-ends, the normal way to operate holders and at the same time ensure fairly constant gas composition (*i.e.*, proportion of carburetted water gas) was gradually to lose stock from full capacity on Monday morning to minimum capacity on Friday evening, with, of course, the daily ups and downs consequent upon majority consumption in the daytime.

Although they might complain of the variation in gas load throughout the year, they must remember that a steady load would require considerable standby plant to allow for repairs, whereas with seasonal loads they could take advantage of the off season to effect repairs and still carry only sufficient plant to meet the winter load.

A New System of DIRECT AIR HEATING

AN unusual method of gas central heating was introduced to the trade and the technical Press at a reception given by the Chandos Engineering Co., Ltd., at the Building Centre on November 27. The principal feature which distinguishes this system from the more usual type of air heater lies in the direct use of the products of combustion as the heating medium, thus eliminating the losses associated with indirect systems.

By incorporating a filter bed to desulphurise the gas prior to the burner, the actual products of combustion can be circulated as a clean and healthy heating medium. The resulting economies in fuel, time, and upkeep of such a direct system of heating are consequently considerable, since thermal efficiency is as near 100% as is possible. With re-circulation of the warm air, coupled with thermostatic control, a state of balance is quickly reached, so that a much reduced quantity of gas will be sufficient to maintain the temperature throughout the system.

Rapid Heating

So rapidly can large spaces be warmed in this manner, it is claimed, that it is unnecessary to start up the appliance very long before the space is occupied. School rooms, churches, assembly halls, hotel lounges, restaurants, etc., can be ready for use after, say, 20 minutes of heating. The heat can, in effect, be turned on and off as needed almost like drawing water from a tap.

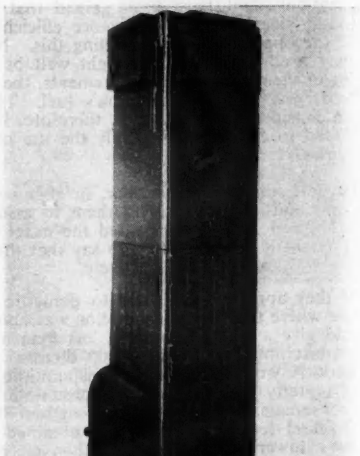
The purifying material, which is marketed under the name of 'Carbocell'—a product of the National Smelting Co., Ltd., of Avonmouth—becomes fully active at a temperature in the region of 450°C. The unit is designed for raising the material to this temperature without loss of heat in the system. As 'Carbocell' does not undergo chemical change during the process, it does not use up any heat, or dissipate energy in any form. One might almost describe it as a 'chemical filter,' which operates best at the temperature mentioned. The 'Carbocell' is packed into a chamber the walls of which form the flue-ways through which the burnt gas is emitted, as a purified heating medium, into the system but not until an appropriate quantity of fresh or re-circulated air has been admixed, in order to adjust the temperature or restore vitality.

The Chandos system renders town gas almost entirely free from both organic and inorganic sulphur. The total sulphur content can be reduced to 3 grains per 100 cu.ft.

Economical to Install

The system is economical to install, to operate, and to maintain. No structural alterations are required to the building—though the simple system of ducts can be economically built into new buildings if early provision is made for them. As indicated, there is no prolonged heating-up period, and the appliance can be turned off immediately the occupants have left the premises. One charge of 'Carbocell' purifying medium is required per heating season, and costs only a few shillings. This is virtually the only maintenance work required on this unit. The operation is a fairly simple one, and can be carried out either by a maintenance engineer or by the Chandos local agent at a nominal charge.

The system has been in day-long operation throughout the winter in crowded offices with all doors and windows firmly closed—without any complaint of discomfort on the part of staff. It has been installed also in private and public buildings and, in general, has been in use long enough for its claims to be confirmed.



Self-contained model of the Chandos 'Gasanair' Heater.

The system has the added advantage of being a heating and ventilating system combined, at no extra cost. During the heating period the air is continually 'revitalised' by the introduction of the requisite amount of fresh air, which can be accurately controlled. In summer months fresh air can be blown into the building; or, alternatively, the fan can be set in reverse and thus provide an extractor system.

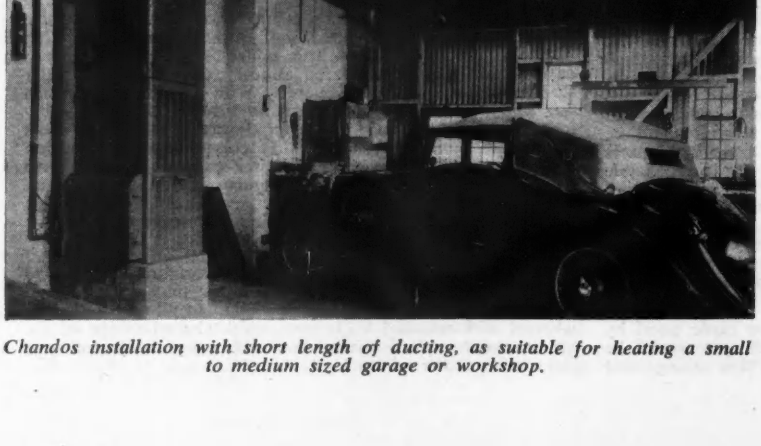
Automatic Operation

The heaters have a standard finish of green synthetic enamel, with bronze combustion chamber. Alternative colours can be supplied on request. All controls are housed at the side of the unit. Only one gas and one electricity connection are required. The unit operates automatically when the gas cock and fan-switch are turned on.

Various types of Chandos 'Gasanair' (as they are styled) units are available—both those relying on ducting for the transmission of the heated air to a number of different points and cabinet models which discharge the warm air directly through grilles at the top, with a 'throw' of up to 30 ft. Outputs from 50,000 to 1 mill. B.Th.U. are provided by the different models. The heating appliances are surprisingly compact and occupy a very small floor space.

It will be appreciated that this type of system is suitable for drying processes, and the firm is in a position to adapt the equipment in any way that may be necessary to apply it to this purpose.

We also saw the prototype of a domestic model which the firm is developing. Of a size closely akin to that of the average gas cooker, the cabinet can be accommodated in line with the normal range of kitchen equipment, while it has the additional feature of incorporating a small gas-heated circulator capable of providing all hot water requirements of the household.—*Chandos Engineering Co., Ltd., 17, High Street, Egham, Surrey.*



Chandos installation with short length of ducting, as suitable for heating a small to medium sized garage or workshop.

TRADE NEWS

British Thomson-Houston

AS workshops become higher and longer the sign language ceases to be an effective means of ground to crane-cab communication. The shop-manager is only too well aware of the losses entailed in track-time—*i.e.*, the non-productive period that elapses between 'lifts.' Hence the very real and critical interest that attended a recent demonstration of the new B.T.-H. 'Clearcall' ground-to-cab system in the melting shop of a large modern steelworks.

This shop was chosen because of the large volume of traffic, and the attendant electrical and acoustical noises associated with a bank of eight open-hearth furnaces, fed by three furnace chargers and served by two overhead cranes on a runway half a mile long. The B.T.-H. demonstration equipment embraced microphone transmitters and control box located near the furnace control panels, with 'speakers' in the crane-cabs. The output from the microphone is fed through a modulator and, at suitable carrier frequency is directly connected to the normal crane-feeder conductors, the transmission being picked-up via the crane-cab collector arms, demodulated, and reproduced by the speaker and horn assembly in the operator's cab.

The results were highly satisfactory. The type of equipment and circuit employed completely eliminated 'statics'; neither was there any fluctuation in volume from one end of the shop to the other. Orders from ground level were clearly received, and manoeuvring carried out promptly and accurately without the slightest hesitation.

Permanent installations for ground to crane-cab communication will follow this successful application, which in many ways has proved its worth in speeding production in all kinds of industry.—*British Thomson-Houston Co., Ltd., Rugby.*

Elliott Brothers (London)

ELLIOTT BROTHERS (LONDON), LTD., manufacturers of electrical, electronic and process control instruments, announce the transfer of their Birmingham branch office to larger and more modern premises at 181, Corporation Street, Birmingham, 4 (Telephone: Central 8313). The new premises provide showroom facilities with a window facing the main thoroughfare, ample office accommodation, and workshop space for the service department.

The office is the area sales, service and instrument repair centre for the Midland counties, including Warwickshire, Worcestershire, Staffordshire, Shropshire, Northants, and Leicestershire. The company's process control interests are in the hands of Mr. A. H. Robinson and Mr. H. F. Johnson, while Mr. G. F. Thomas specialises in electrical measuring instruments.

A. Luson & Sons, Ltd.

PIONEERS in the design and manufacture of wire brushes since 1874, A. Luson & Sons, Ltd., are offering an entirely new brush, the 'Gem' Vulcan, a rubber-bonded wire rotary brush which outmodes the normal type of wire brush.

Made by a patented process exclusive in this country, the 'Gem' Vulcan has been proved to give up to four times longer wear and is completely safe in use to an operator owing to the fact that the wire bristles are completely anchored in a vulcanised rubber cushion, in addition to the anchorage any normal rotary wire brush contains. By its nature the brush is perfectly balanced, any spaces caused by loosely packed wires being taken up by the vulcanised rubber. It will not splay and retains its proper shape throughout its life.

An extract from an Air Ministry test report on the 'Gem' Vulcan states: 'The brush has been in use for a total of 364 hours (whereas 90 hours is the average life of an ordinary brush), and although the wire had worn almost to the rubber mounting it has retained its shape and has no sign of disintegration, as with some brushes which are subject to pieces of wire breaking off with resultant danger hazard to the operator. The brush is easy to handle, probably due to the fact that even wear takes place, and therefore retains its balance for longer than the normal type of brush.' —*A. Luson & Sons, Ltd., Gem Works, Minerva Road, Park Royal, London, N.W.10.*

Trade Publications

GENERAL REFRACTORIES, LTD.—A leaflet dealing with the G. R. 'Sillmax' range of refractory bricks which have been introduced to meet a need for a higher grade brick of the aluminous type to withstand severe operating conditions in modern oil-firing and other installations. The leaflet includes data relating to chemical analysis as well as physical properties.

GRAPHITE PRODUCTS, LTD.—A new folder on 'Foliac' jointing compounds which are used in considerable quantities by various Gas Boards, for general steam and water work, for maintenance and distribution, for the heavier type of flanged work and for application where combined conditions exist. The firm's Red Compound is specially suitable for benzole plant where its unique properties withstand the insidious creeping and solvent action of such liquid on ordinary compounds.

GOODENOUGH CONTRACTORS' MACHINERY, LTD.—The latest catalogue illustrating and describing the firm's range of automatic self-priming centrifugal pumps. This catalogue is very comprehensive and includes such details as ouput/head graphs for each pump, together with shipping specifications for the use of overseas customers, and also details of the engines fitted to each pump.

COMPANY NEWS

KEITH BLACKMAN

A scrip bonus of one new 10s. share for each share held on December 4 is announced by the Directors of Keith Blackman, Ltd.

POWELL DUFFRYN LTD.

The directors of Powell Duffryn, Ltd., announce a dividend of 2⅜% actual, less tax, on the £3,600,000 4⅛% cumulative preference stock for the six months ending December 31, 1952.

WAILES DOVE

Following expansion from £158,000 to £213,000 in 1950-51, trading profits of Wailes Dove Bitumastic to September 30 last show a further increase of £47,000 to £260,000. This result attracts the considerably higher tax charge of £146,000, compared with £105,000, but the company is again raising the distribution on the £200,000 one-class capital. The rate becomes 30%, against 27½% in the previous year and 25% in 1949-50. The net profit records a slight improvement at £76,400, compared with £74,700, and is equal to 2.4 times the £31,500 net cost of the higher dividend. Reserves have been strengthened to the extent of £45,000.

ALLIED IRONFOUNDERS

In announcing maintenance of the interim dividend at 7½% in respect of the year ending March 31, 1953, the directors of Allied Ironfounders state that the decline in home trade sales early this year and the serious loss of trade in the export markets mentioned in the Chairman's statement issued with the accounts to March 31 last, have reduced earnings for the half-year to September 30. Home trade is, however, improving and despite the drop in the half-year's profits, the Board feel justified in declaring the same interim dividend as last year. For 1950-51 there was a 10% final to make 17½% on the ordinary capital of £2,437,959.

FALK STADELMANN

The annual general meeting of Falk, Stadelmann & Co., Ltd., was held on November 28 in London, Mr. Hugo Falk (Chairman and Managing Director), presiding. The following is an extract from his circulated statement: The consolidated profit and loss account for the year ended March 31, 1952, shows that the gross profit and the income from investments amounted to £662,419, as against £572,541. The group net profit amounted to £183,841. The consolidated balance sheet shows current assets of £2,944,784, against which current liabilities and provisions amount to £1,259,809. The net profit of the parent company, which includes dividends received from the subsidiary companies, is £105,834. The Directors propose to pay a final dividend of 5%. This brings the dividend again up to 15%, thus maintaining the same rate for the sixth consecutive year. The total reserves (including share premium account but excluding future taxation reserve) now amount to £1,088,129.

SCRAP GAS METERS WANTED

Top prices paid—Collection arranged from anywhere in U.K.

Sell to those best suited to deal with them.

Sell to — MITCHAM SMELTERS LIMITED
Rometal Works, Red House Road,
Mitcham Road . . . CROYDON . . . Surrey.
Tel: THOrnton Heath 6101. (Private Branch Exchange).

Truck Loads to our own private siding, Beddington Lane, Southern Region.

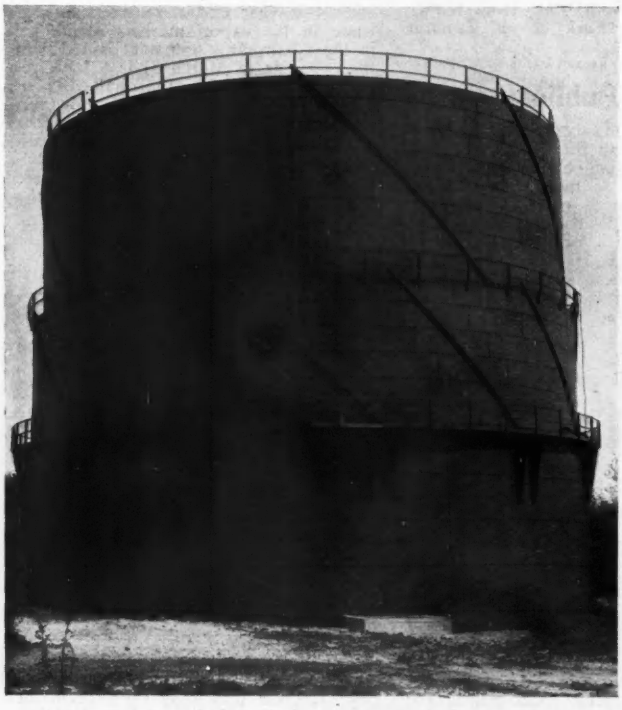
GAS RETORTS

HARRIS & PEARSON LTD
STOURBRIDGE, ENGLAND

INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C

Manufacturers of
Fire Bricks, Lumps & Tiles
OF EVERY DESCRIPTION

15



ONE OF A SERIES OF EIGHT GASHOLDERS IDENTICAL IN DESIGN
CAPACITY 200,000 CUBIC FEET EACH

C. & W. WALKER
LIMITED
DONNINGTON
Nr. WELLINGTON — SHROPSHIRE
'Phone : 12 Wellington-Shropshire
'Grams : "Fortress," Donnington-Shropshire

GASHOLDERS
SPIRALLY-GUIDED
HIGH PRESSURE
WATERLESS
GUIDE-FRAMED

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'Grams : "Fortress," Sowest, London.

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

See our Advertisement Next Week.

REAVELL & CO. LTD. IPSWICH.

J. BROWN & CO. LTD.
SAVILE TOWN, DEWSBURY, YORKS.

Supply:–
"BROWNOX-de-LUXE" PURIFYING MATERIAL
Purchase:–
SPENT OXIDE

UNDERPRESSURE ENGINEERING CO., LTD.
UNION FOUNDRY, MANSFIELD, NOTTS.
ALL TYPES OF DISTRIBUTION MATERIAL IN STOCK
Service Enquiries:
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'Phone: MANSFIELD 1256. *'Grams:* CASTINGS, MANSFIELD.
'Phone: TEMPLE BAR 9910. *'Grams:* WASHER, ESTRAND, LONDON

UNDERPRESSURE CONNECTIONS
SPLIT COLLARS
SOCKET CLIPS

CENTRAL ACTION DRILL STANDS
SERVICE CLEANSERS
TOOLS, ETC.

COAL AND COKE SCREENING & SIZING PLANTS.
RETORT SETTINGS PRODUCERS, FURNACES REPAIRS.

GOODALL, CLAYTON & Co. LTD.
LEEDS.

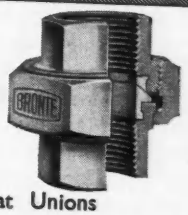
CONVEYORS, ELEVATORS, BUNKERS, ROOFS, HOISTS, Etc.

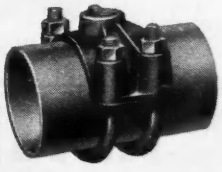
ONX *The Cements for patching hot retorts*
AND ALL TYPES OF FURNACES
Super 83 Brand **FIRE CEMENT**
A.L.CURTIS & Co
WESTMOOR WORKS. CHATTERIS. CAMBS.

COKE SACKS!
HEMP AND JUTE, KEENEST PRICES
H. R. WEBSTER, LTD.,
SALMON LANE WHARF,
LIMEHOUSE, LONDON, E.14.
ESTABLISHED OVER 150 YEARS.
Telephone: STEpney Green, 4458/9.

WASK
Malleable Iron
PIPE FITTINGS
Screwed British Standard taper pipe thread. Individually air tested.

BRONTE SUPER & WORTH
bronze seat
UNIONS
AIRE all iron cone seat Unions





PIPE SADDLES
for steel, cast iron and asbestos cement pipes.

WALTER SLINGSBY
AND COMPANY LIMITED.
NEW DAM WORKS, KEIGHLEY.
Phone 3749

THE NEW A&M OPTIONAL METER

We confidently present our latest coin meter available for pennies and shillings, sixpences and shillings, or half-crowns and shillings and readily adjustable for single coin operation at the gas engineer's option.

The mechanism embodies the fruits of many years' research, every part is precision made to close limits, range-plates are interchangeable - absolutely - one meter with another.

ALDER & MACKAY LTD

NEW GRANGE WORKS, EDINBURGH

Also at

BRADFORD · MANCHESTER · LONDON · BELFAST · NEWCASTLE-ON-TYNE · CORK

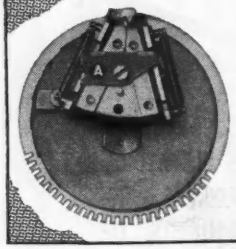


Fig. 1, on left, shows the back of the range-plate adjusted for optional coin. The swinging plate 'A' defies any attempt to insert a coin when one is already in the other slot.

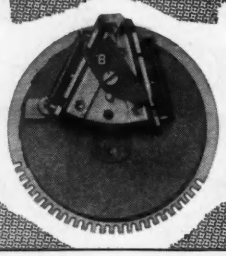


Fig. 2, on left, shows the plate positioned to admit sixpences only. To make this adjustment, loosen screw 'B' and tighten it again with the plate in the new position.

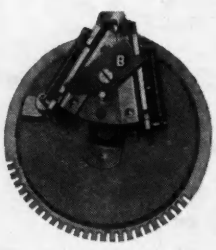


Fig. 3, on left, shows the plate positioned for shillings only. To make this adjustment, remove screw 'B', reverse the plate as shown and replace the screw.

BEST IN THE TRADE — ALCOSA — BRITISH MADE ★

CONVERSION FROM SOLID FUEL

This burner is specially designed for converting existing bakers' ovens, heating and steam boilers and other medium temperature applications to gas firing from solid fuel. Simple to control by hand or automatically. Suitable for plants requiring high heat inputs or with restricted combustion space. Operates on town gas at normal pressure and can be installed without extensive alterations.

'ALCOSA' B.3030 Natural Draught Gas Burner.

The 'Alcosa' range includes:

AIR GAS MIXERS FOR WIDE RANGE OF HEAT TREATMENT PLANTS. GAS BURNERS. GAS FIRED FURNACES FOR FORGING, HARDENING, ANNEALING, WELDING & MELTING. HIGH SPEED BRAZING APPARATUS, SOLDERING & BRAZING EQUIPMENT. TINNING BATHS. ALSO THE NEW 'WILKES' B.2106 S.L. BLOWPIPE.

Write for lists — *and full details*

A.H.WILKES & CO.

A SUBSIDIARY OF WILLIAM ALLDAY & CO., LTD.

THE MOST DEPENDABLE NAME IN GAS APPLIANCES

ALCOSA WORKS · STOURPORT-ON-SEVERN · WORCESTERSHIRE · TELEPHONE: STOURPORT 311-4 · TELEGRAMS: YADALL STOURPORT
LONDON OFFICE & WORKS · CRESSWELL WORKS · SOUTH NORWOOD · S.E.25 · TELEPHONE: ADDISCOMBE 1167

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire :- 52/- per annum; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. Telegrams: Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright. Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

FIRE!

WHERE'S YOUR

NU-SWIFT?

The World's Fastest Fire Extinguishers —for every Fire Risk

Pressure-operated by sealed CO_2 Charges

NU-SWIFT LTD · ELLAND · YORKS

In Every Ship of the Royal Navy

The

LIMIT OF EFFICIENCY CAN BE REACHED

by the use of

LUX

GAS PURIFYING MATERIAL

Sole Importers:

HARRISONS (London) LIMITED

66, Mark Lane, LONDON, E.C.3

Telegrams: Birchrock, London Telephone: ROYal 3120

"KLEENOFF" *

THE COOKER CLEANER

"KLEENOFF"

FIBRE BRUSHES

RUBBER MOPS

KETTLE DESCALER*

(NEW "KLEENOFF" PRODUCT)

* *For resale to the public, and in bulk for Works use*

BALE & CHURCH, LTD.

7, CROMPTON WAY, CRAWLEY, SUSSEX.

SPECIALISED LUBRICATION

Microtime Oils and **Greases** for Clocks, Meters, Fine Instruments and all Delicate Mechanisms. These oils possess extraordinary stability under extreme temperature conditions, do not spread, and give perfect lubrication over very long periods

also

Microloid Dry Lubricant—a quick-drying suspension of colloidal graphite in a non-inflammable carrier.

Descriptive literature on request from

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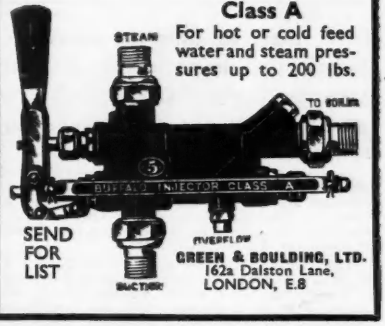
SELWYN HOUSE, LONDON, W.C.1 TERminus 6526

BUFFALO INJECTORS

Class A

For hot or cold feed water and steam pressures up to 200 lbs.



SEND FOR LIST

GREEN & BOULDING, LTD.
162a Dalston Lane, LONDON, E.8

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

ENGINEER experienced in heavy chemical or gas industry to manage small chemical engineering organisation with important connections. Headquarters in London area. Age 30-40. Good basic salary is offered. Apply No. 130, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

JERSEY GAS LIGHT CO., LTD.

WORKS FOREMAN

APPLICATIONS are invited from suitably qualified persons for the position of WORKS FOREMAN. Applicants must be Engineers to trade and should have knowledge and experience of the Operation, Maintenance and Repair of Gas Works Plant and the handling of men. Experience with Woodall-Duckham Vertical Retorts would be an advantage.

The successful applicant may be required to pass a medical examination, and will be required to live on the Works with rent, rates, fuel and lighting free and the salary offered is £450 per annum.

Applications giving details of experience, positions held (ex-Service men should state rank held) with *copies* of Testimonials should reach the undersigned within ten days of the publication of this advertisement.

S. P. PEPIN,
Managing Director.

97, Bath Street,
Jersey,
Channel Islands.
November 27, 1952.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

EAST MIDLANDS GAS BOARD

LEICESTER & NORTHANTS DIVISION

SHOWROOM SUPERINTENDENT—

NORTHAMPTON UNDERTAKING

APPLICATIONS are invited from suitably qualified persons for the position of Showroom Superintendent at the Northampton Undertaking.

Applicants must have had considerable experience of Showroom supervision, appliance sales and consumer service, and be well versed in window and general display practice.

The appointment will be made in Grade A.P.T. VIII (£565-£645 per annum) and the commencing salary will be in accordance with the experience and qualifications of the person appointed.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications stating age, experience and qualifications and giving the names of two referees should be addressed to Mr. J. Corrigan, Senior Group Manager, 45, Abingdon Street, Northampton, to be received not later than Wednesday, December 17, 1952.

H. B. TAYLOR,
Divisional General Manager.

Gas Offices,
Millstone Lane,
Leicester.
November 27, 1952.

EAST MIDLANDS GAS BOARD

SHEFFIELD AND ROTHERHAM DIVISION

ASSISTANT DIVISIONAL MAINS ENGINEER

APPLICATIONS are invited for the position of ASSISTANT DIVISIONAL MAINS ENGINEER who will be centred on Sheffield.

Applicants should have had considerable practical experience of Mains and Service laying and have thorough knowledge of the planning and design of all types of Distribution projects. They should be Corporate Members of the Institution of Gas Engineers or possess an equivalent qualification.

The salary will be in accordance with Grades A.P.T. IX or X of the National Salary Scales for Gas Staffs up to a maximum of £745 per annum and the initial placing will be dependent upon the qualifications, experience and ability of the applicant. A house will be made available at a reasonable rental.

The post is superannuable and the successful applicant may be required to pass a medical examination.

Applications, stating age, qualifications, and giving details of experience, together with the names of two referees, should be addressed to reach the undersigned not later than December 29, 1952.

C. C. WOOD,
Divisional General Manager.

Gas Offices,
Commercial Street,
Sheffield, 1.
December 5, 1952.

WEST MIDLANDS GAS BOARD

BIRMINGHAM AND DISTRICT DIVISION

FOREMAN FITTER—

SALTLEY GAS WORKS

APPLICATIONS are invited for the above position.

The salary will be within Grade X (£645-£745 per annum) of the National Salary Scales for Gas Staffs.

Candidates must have a comprehensive knowledge of steam boilers, engines, turbines, compressors, pumps, cranes and mechanical handling plant generally, and should be able to organise and control staff engaged on erection and in the fitting, machine, plating and welding shops.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age and giving full particulars of training, qualifications and experience, together with the names of two referees, should be addressed to Mr. J. E. Wakeford, Divisional General Manager, West Midlands Gas Board, Birmingham and District Division, Gas Offices, Edmund Street, Birmingham, 3, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

NORTH STAFFORDSHIRE DIVISION

STOKE-ON-TRENT DISTRICT

HOME SERVICE ADVISER

APPLICATIONS are invited for the above post from candidates with at least two years training in Domestic Science, holding an appropriate Diploma or Certificate, and having had some practical experience.

The salary will be in accordance with Grade VI (£392 to £456 per annum) of the National Salary Scales for Gas Staffs.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be addressed to Mr. J. S. Warrillow, Engineer and Manager, West Midlands Gas Board, Gas Works, Etruria, Stoke-on-Trent, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT DIVISION

DRAUGHTSMAN—DIVISIONAL

DISTRIBUTION OFFICE

APPLICATIONS are invited for the above position, which is located at Dudley.

Applicants should possess a sound knowledge of general engineering drawing. Experience of gas main distribution work and surveying would be an advantage.

The salary will be in accordance with Grade VII (£545-625 per annum) of the National Salary Scales for Gas Staffs.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, giving personal details, particulars of training, qualifications and experience, and the names of two referees, should be addressed to Mr. F. C. Briggs, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

SOUTH WESTERN GAS BOARD

NORTHERN DIVISION

PUBLICITY OFFICER

APPLICATIONS are invited from highly qualified persons for this position and applicants should possess an exceptionally wide experience in public relations.

The duties will include attending meetings and preparing press articles, editing the Board's "News Sheet," planning advertising campaigns, preparation of lay-out in connection with all classes of advertising literature and organisation and planning of exhibitions.

The salary will be commensurate with qualifications and responsibility. Applicants should indicate the salary required.

Applications should be sent in by December 15, to: W. J. Baker, Divisional Manager, South Western Gas Board, Radiant House, Bristol, 1.

SCOTTISH GAS BOARD

DUNDEE GROUP

DUNDEE UNDERTAKING

APPLICATIONS are invited from suitably qualified persons for the appointment of SENIOR TECHNICAL ASSISTANT. Applicants require to have experience in maintenance and development of all Gas Works Plant, district holder and governor stations and design of works layout. Salary scale:—Grade X (Provincial A) (from January 1, 1953, £665-£765 per annum) with placing according to qualifications and experience. Candidates should possess the Higher National Certificate or appropriate equivalent qualifications of the Institution of Gas, Civil, Mechanical and/or Structural Engineers.

Applications giving the names of two referees, stating age, education, training, qualifications and experience and whether present post is superannuated, should reach the undersigned within 14 days of publication of this advertisement.

W. S. JOHNSTON,
Group Manager.

Gas Works,
50 East Dock Street,
Dundee.

MISCELLANEOUS

MOISTURE TESTING for coal, coke and ash and many chemicals. Modern method is 'SPEEDY' MOISTURE TESTER, giving accurate percentage water in 2/3 minutes. Already in use extensively in gas industry. Needs no electricity. Portable, simple for use by unskilled labour. Write for illustrated brochure, or order direct £24 10s. 0d. complete.—Thos Ashworth & Co. Ltd. (Dept. G.J.), Basket Street, Burnley, Lancs.

PLANT FOR SALE & WANTED

FOR SALE:—WASTE HEAT BOILER. Maker Ruston and Hornsby. Year of Construction: 194 Rate of Evaporation: 1,070 lbs. of steam per hour a 100 lbs. per square inch pressure from feed water a 60°F. and inlet gas temperature 800°C. Diameter insid outer shell, 5 ft. 0 in. Length between tube plates 6 f Please apply to: East Midlands Gas Board, Lincoln shire Division, Belle Vue House, Carline Road, Lincol

---

FOR SALE:—One Vertical GAS COMPRESSOR (only been in commission 100 hours) 4500 C.F.M Reavell type V2/9E, direct-coupled, 10 lb. press complete with bedplate and 300 h.p. motor, 290 r.p.m. 440 volts, 3-phase, 50 cycles, with Allen-West starter No. 129, *Gas Journal*, 11, Bolt Court, Fleet Street London, E.C.4.

WANTED:—REGULAR SCRAP GAS METERS AND PARTS. Best prices paid. Offers to:- Mitcham Smelters Ltd., Red House Road, Croydon Surrey. *Tel.*: THOrnton Heath 6101 (Private Branch Exchange).

LEEDS X.L. FIRE CEMENT CO., HYDE PARK, LEEDS

THE "FLUXITE QUINS" AT WORK

"Come on now, tell us the worst.
Do we still have to search for this burst?"
"If you find it" said OH,
"We'll need FLUXITE y'know.
But you might take the lino up first!"

For all SOLDERING work—you need FLUXITE—the paste flux—with which even dirty metals are soldered and "tinned." For the jointing of lead—without solder and the "running" of white metal bearings—without "tinning" the bearing. It is suitable for ALL METALS—excepting ALUMINIUM.

With Fluxite, joints can be "wiped" successfully that are *impossible* by *any other method.*

FLUXITE has been used for over 40 years in the Government Works and by the leading Engineers and Manufacturers. OF ALL IRONMONGERS—in tins—From 1/- upwards.

FLUXITE
SIMPLIFIES *ALL* SOLDERING

Write for Leaflets on CASE HARDENING STEEL and TEMPERING TOOLS with FLUXITE also on "WIPED JOINTS"
Price 1½d. each.

Fluxite Ltd. Bermondsey Street, S.E.1

through the use of the

HOLMES-MALLET BUTANE/AIR PLANT

— W. C. HOLMES & CO. LTD.

HUDDERSFIELD • LONDON • BIRMINGHAM

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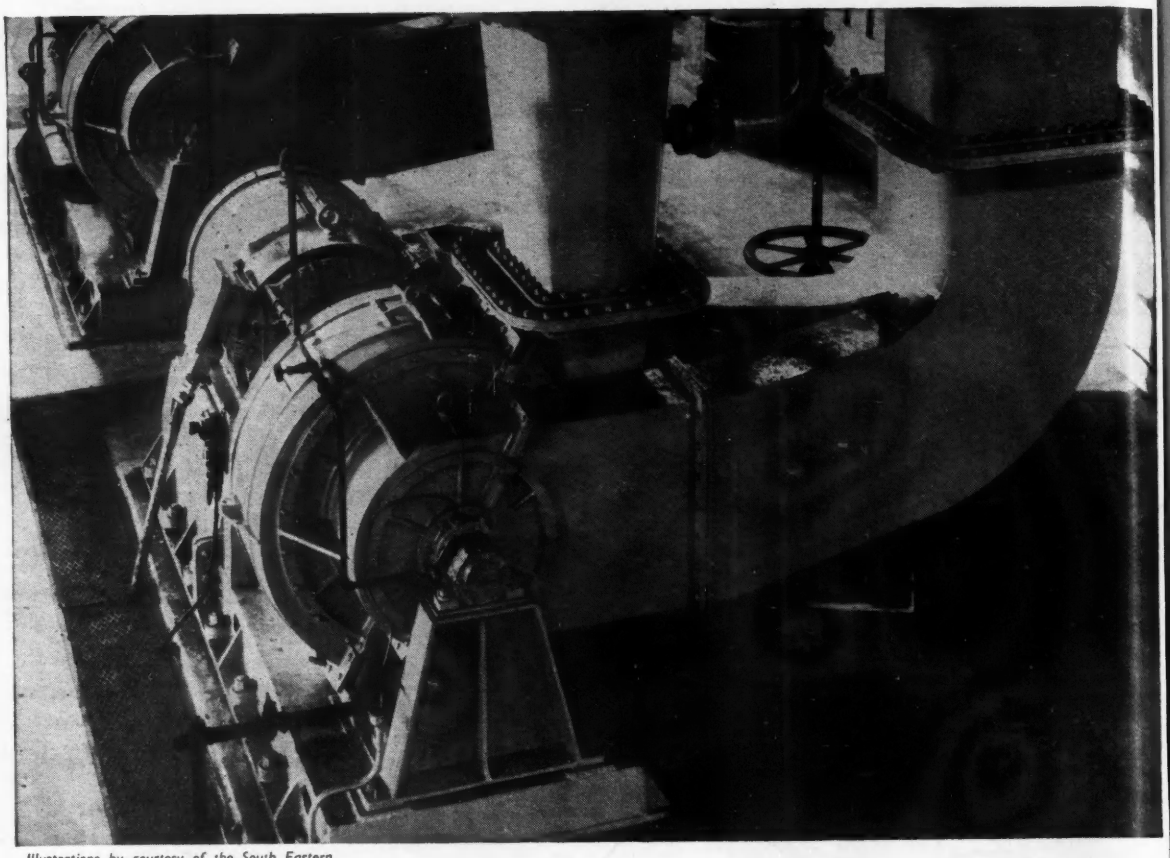
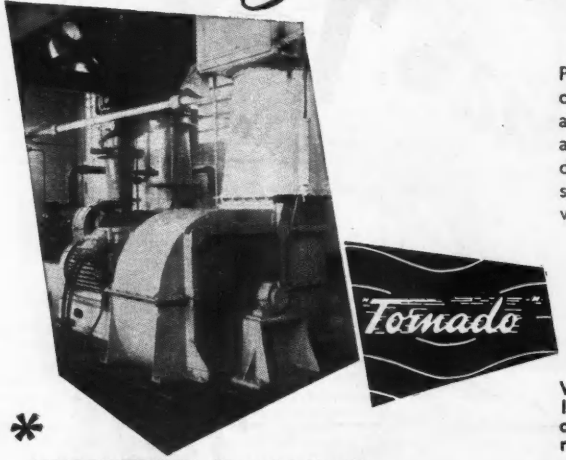


Illustrations by courtesy of the South Eastern Gas Board and Messrs. Humphreys & Glasgow Ltd.

Gas Boosting *



Part of an installation at the East Greenwich Gas Works for the supply of South London's gas are the "TORNADO" gas boosters illustrated above. Each is capable of shifting over a million cubic feet of producer gas an hour, and each was supplied with cast iron gas tight casings with detachable segments for easy servicing, stainless steel impeller and shaft, self aligning roller bearings and flexible couplings. One of the boosters was arranged for motor drive and the other for steam turbine.

*

LARGE ILLUSTRATION: *42" type 9 double width double inlet gas boosters.*

DUTY: 1,010,000 c.f.h. producer gas at 60°F. Sp.gr. ·907 (air=1) raised to 104°F. saturated giving ·28" w.g. differential over inlet and outlet connections taking 138 H.P.

SMALL ILLUSTRATION: *40" type 15 air blowers.*

DUTY:	*Closed outlet*	*Delivery*
Air quantity	*nil*	*12830 c.f.m.*
Speed r.p.m.	*1480*	*1475*
Static pressure	*15.8" w.g.*	*13" w.g.*
Power absorbed	*13 B.H.P.*	*39 B.H.P.*

FAN ENGINEERING AND INDUSTRIAL GAS EQUIPMENT

We are manufacturing gas boosters which cover a range of from 5,000 to 1,500,000 cubic feet per hour, and if you are concerned with the movement of air or gas, ask us to send you Publication No. 5/8, a survey of the standard range of "TORNADO" high pressure blowing and exhausting fans.

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MILL MEAD ROAD, TOTTENHAM, LONDON, N.17

'Phone: Tottenham 4522 (twelve lines). 'Grams: "Keithblac, Norphone, London."

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What's in a Name..?

In this case something worth noting. Continuous research, carried out on our own full-scale gas works; testing gas-making coals, studying problems of retort and setting construction, checking materials used on Glover-West installations, designing new equipment to increase retort house efficiency. A progressive approach to the job of producing efficient carbonisation plant. We are not static. Our aim, in a word, is improvement.

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R I

The Lamplighter

THE application of coal gas to street lighting introduced by Murdock in 1802 provided an example of turning swords into ploughshares when gun barrels were used as a means of conveying the gas.

This is why, even at the present time, tubes are sometimes referred to as 'barrel'.

Steel tubes have been developed since Murdock's time for far wider purposes than were then envisaged and are now indispensable to modern civilisation.

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